Government of Tamilnadu

SCIENCE

V - Standard

Untouchability
Inhuman - Crime

Department of School Education

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CONTENTS

S.No.		Page
1	Green World	1
2	Dwelling Places of Animals	16
3	Butterfly and Honey Bee	25
4	Space Travel	35
5	Water	44
6	Air	53
7	Food	61
8	Human Brain and Sense Organs	67
9	Hygiene and Prevention of Diseases	79
10	Materials and different types of Houses	88
11	Save Energy	98
12	Scientists	107
13	Botanical Garden	113

What these Icons stand for!

Fact

Do you know?

To think:

Evaluation

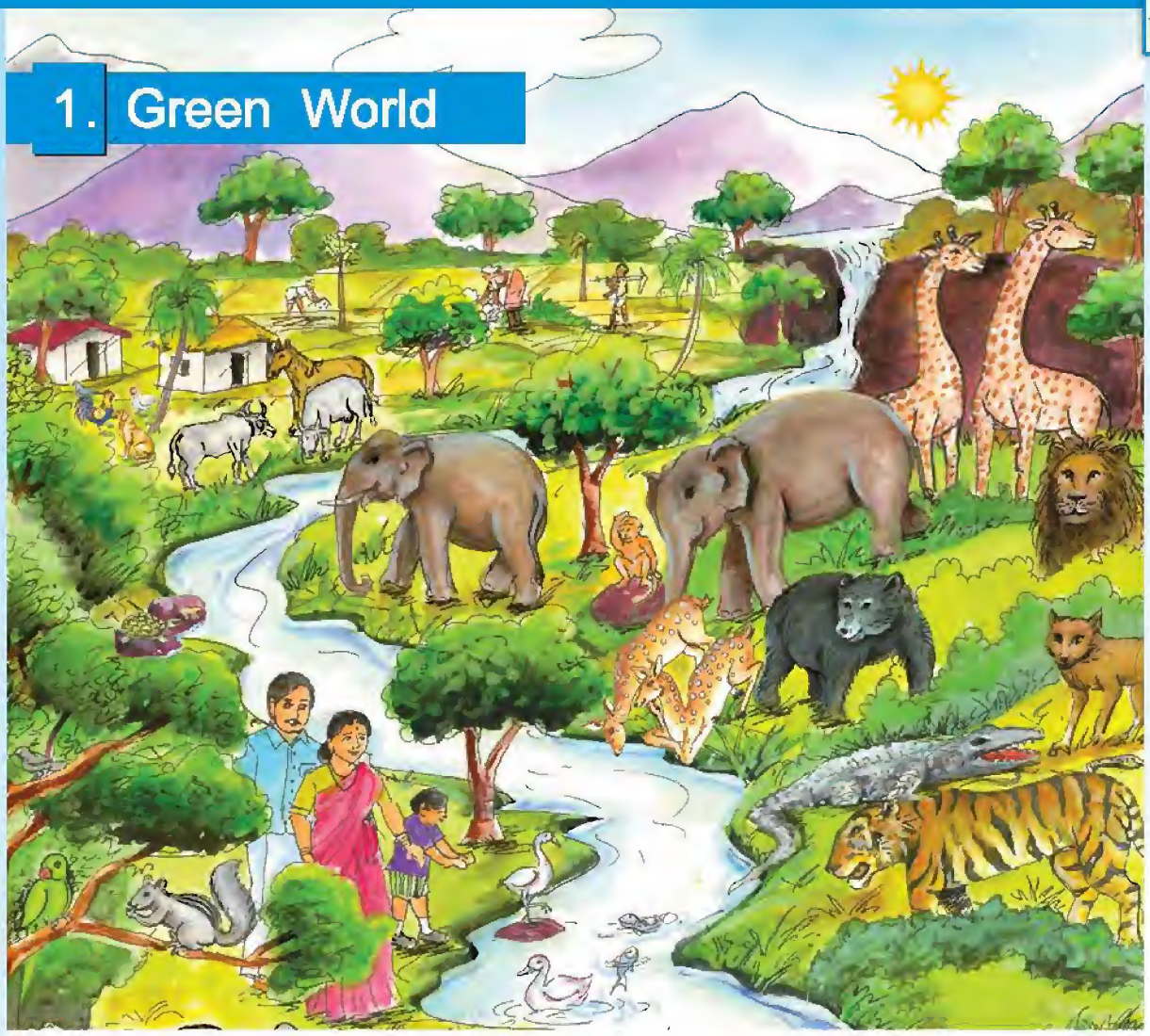
Assignment

Do and See / Activity / Experiment

Project

For your attention

1. Green World



Chain of Life

The picture above shows the connection that exists between Sun, Plants, Birds and Human beings.

- The plants are able to produce the food needed for their existence using solar energy.
- The birds and human beings depend on plants for their food.
- Birds build their nests in the trees.
- Trees give shade.

Land, Water, Sun, Wind	–	Non-living Factors
Plants, Animals, Human beings	–	Living Factors

From the given picture, you might have learnt the connection that exists between the living and non-living factors. Likewise. choose different living and non-living factors and tabulate the dependence that exists between them.

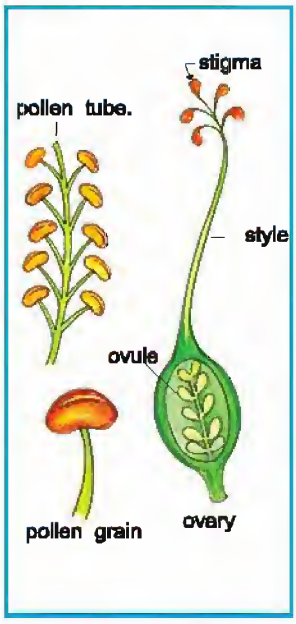
S. No.	Factors	Life connections
1.	Water, Deer, Grass	• Water is essential for the growth of grass. • Deer eat grass as their food. • Water is necessary to quench the thirst of the deer.
2.		
3.		

Pollination

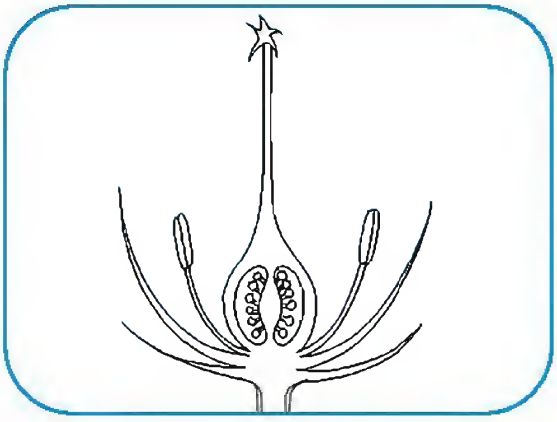
Arun and Kavitha came back from the school. After having their snacks, they went to their garden. They watered the tomato plants.

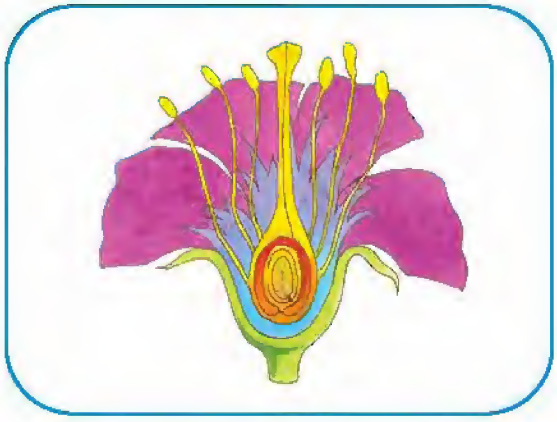
Kavitha asked her brother, " How are fruits and vegetables produced by plants?"

(Arun plucked a flower from the plant and showed it to his sister)



Arun : Kavitha, look at this flower. This part is called pollentube. These are the pollengrains. This is the stigma. This is the style. What is seen in the lower part is called the ovary. The pollen in pollentube goes to the stigma and fertilization takes place within the ovary. The ovary becomes the fruit and gets ripened. The food gets stored up in this receptacle. It is this part that we eat. The ovule becomes the seed and gets embedded there.





The transfer of pollen grains from the anther to the stigma is called pollination.

The transfer of pollen grains from the anther to the stigma of the same flower is called self pollination.

Kavitha : How does the pollen grains reach the stigma?

Arun : Haven't you seen insects, butter flies and bees flying from one flower to the other? When they fly, they carry the pollen of one flower and it reaches the stigma of another flower.

The transfer of pollen grains from the anther of a particular flower to the stigma of another flower of the same kind is called cross-pollination.
Cross pollination can also take place through air.

The spreading of seeds

Arun and Kavitha ate a mango each and threw the seeds in their backyard. After a few days Kavitha happened to see a new plant growing there. "Look at this plant. Who planted this here?" asked Kavitha to Arun. Arun answered, "Kavitha, do you remember the mango seeds thrown by us the other day? It is a new mango shoot from that".

This shows that seeds are scattered in farms and fields not only by the action of the plants themselves, but also by the effort of human beings.

In addition, seeds are also spread by the action of wind, water, animals and birds.

Spreading of seeds through wind.

Spreading of seeds through water.

Spreading of seeds through animals.

Spreading of seeds through birds.

The process by which seeds are carried from one place to the other by air, water, human beings, animals and birds is called the dispersal of seeds.

Because of the dispersal of seeds...

- There is spreading of plants.
- Plants are grown in newer environments.
- The species of plants are preserved.
- Plants prevent atmospheric pollution.

Let us learn the places of origin of some plants.

Asia	Africa	Europe	South America
Broad beans	Coffee	Peas	Tomato
	Lady's Finger	Cabbage	Potato
Onions	Watermelon	Goose Berry	Maize
			Guava

To think:

Observe the food items tabulated above, can you now tell how their plants came to India from other countries?

India is the birth-place of banyan tree, tamarind tree, neem tree and the mango tree.

Banyan tree

Tamarind tree

Neem tree

Mango tree

Shall we learn how the seeds are spread and what are the factors needed for the dispersal of seeds?

1. Air :

Arun and Kavitha went to Yercaud with their parents. The bus was climbing the mountain. The family was enjoying the beauty of nature.

Kavitha : "Father, how did so many trees grow here eventhough human beings have no access here?". Don't those trees look centuries old?.

Her father, started to explain, "Kavitha, do you see fibres gliding in the air?" Those are the seeds of silk cotton.

They spread through wind, land on the soil and grow as trees. That's how varieties of trees grow on the mountain making it look beautiful".

The seeds of trees like silk cotton, drumstick and calotropis (erukku) are spread though air.

Silk Cotton

Drumstick

Calotropis (erukku)

2. Water:

After climbing down the mountain, the bus was crossing a bridge. The mountain was covered with green trees and plants. The land looked fertile. Coconut trees and saplings were found on the river banks. Kavitha's family was lost in the beauty of nature. "How did these coconut trees grow up here?" asked Kavitha to her father.

What would be the answer of Kavitha's father?

The seeds of plants like coconut, water hyacinth, lily and lotus are spread through water.

Coconut

Water Hyacinth

Lily

Lotus

3. Spreading of seeds by explosion :

After returning from Yercaud, Kavitha went for a walk in the garden. She saw the dry pods of Lady's finger exploding and the seeds being flung out. Will there be new plants coming from these seeds? she wondered. What do you think?

Lady's Finger

Seeds of plants like lady's finger, black gram, black-eyed pea, and balsam spread through explosion.

black gram

black-eyed pea

balsam

4. Animals :

Arun observed plants like Chaff and Achyranthus near his cow shed. Whenever he saw these plants, he used to ask himself how these plants grew there. One day, as he was lost in the same thought, he happened to look at the cow which had just returned from the field after grazing. He saw some seeds and grass stuck on its body. Now Arun must have got the answer to his question. Don't you think so?

Seeds of plants like rough chaff, grass and achyranthus spread through animals.

5. Birds :

On a holiday, Arun and Kavitha went to play in a nearby playground. On the way to the ground, Kavitha saw a plant growing on the wall of an old house.

She asked her brother, " Look at that plant growing on the wall. Who would have sown the seed over there?"

Arun : "Oh... Let me tell you that! This plant has grown because birds like crows, parrots, mynahs and sparrows eat fruits, and the

seeds come out when they pass their waste. When these seeds from birds droppings fall in some place, they sprout and become huge trees".

Can you name the seeds spread by the following living and non-living factors ?

Air	:	_____
Water	:	_____
Bird	:	_____
Animal	:	_____
Human Beings	:	_____

Plants - The Primary Producers:

Arun was having his dinner along with his parents and sister.

Kavitha : "Daddy, we take food for energy and growth of the body. How do trees, plants and creepers which produce the fruits and vegetables that we eat, take their food?"

Arun : "Good question! Plants produce their own food".

Kavitha : "How is that? Please explain it to me".

Arun : "Plants produce their food through photosynthesis. As they produce their own food through photosynthesis, we call them primary producers.

Primary Producers

Plants are the primary sources of food for all living organisms that exist on earth.

EVALUATION

I. Choose the right answer:

1. A non living factor

   a) plants b) animals c) sun d) human beings.

2. The part of a flower which becomes the fruit

   a) pollen grains b) corolla c) stigma d) ovary

3. A plant that spreads its seeds through water

   a) lady's finger b) calotropis c) coconut d) rough chaff

4. Primary producers of food

   a) animals b) plants c) birds d) human beings

5. A plant that spreads by explosion

   a) pomegranate b) lady's finger

   c) tomato d) brinjal

II. Match the following:

1. Black Gram	a) Spread through air
2. Coconut	b) Spread through animals
3. Calotropis	c) Spread through explosion
4. Achyranthus	d) Spread through birds
5. Banyan Tree	e) Spread through water

III. Circle the odd man out:

1. field bean, rice, black gram, peas, toor dhall
2. lotus, calotropis, lily, coconut, water hyacinth
3. calotropis, plantain, coconut, mango
4. lotus, lily, mango, water hyacinth

IV. Answer in one or two sentences :

1. Mention any three factors that influence the spreading of seeds.
2. What is dispersal of seeds?
3. Give any two examples for spreading of seeds through water.
4. What is pollination?
5. Give any two examples for spreading of seeds through air.

V. Answer in detail :

1. Draw a flower and label its parts.
2. Write about the different ways of spreading of seeds.
3. Observe the picture given below and answer the questions.

a) Which part of the flower attracts insects ?

b) In which part of the flower does fertilization take place ?

c) Which part of the flower changes into fruit ?

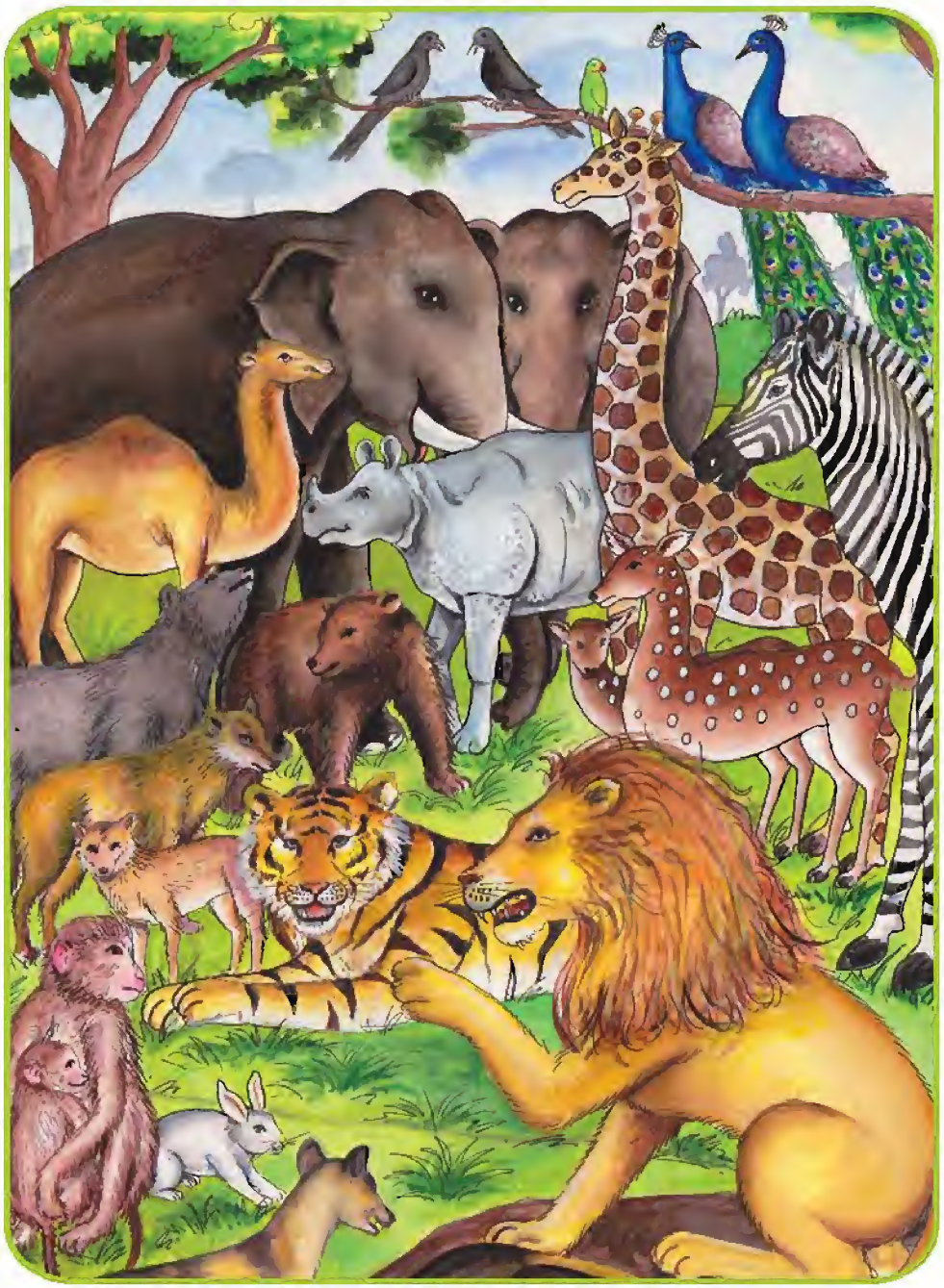
d) Which part of the flower becomes the seed ?

e) Where does pollination take place in a flower ?

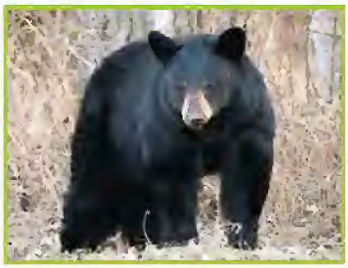
VI. Project :

1. Prepare a flow chart showing your relationship to the living and non-living things around you.
2. Find out how the seeds of the plants (which are found near your house and school) are spread. Prepare a report on this.

2. Dwelling Places of Animals



A dense forest. A conference was held to solve the problems of animals. The venue was full of animals. The lion was the president of the conference.



"Let us begin the conference with a prayer song" said the bear who was compering the programme. So the cuckoos sang a prayer song and the wild dog welcomed the gathering. All the animals started to express their grievances to the king.

"Silence! Silence! I'll give everyone a chance to speak" said the lion.

On behalf of all the animals the elephant who spoke first said," we are not getting enough food and water. Our habitat is slowly diminishing and the area of grazing ground is much reduced".

The lion roared, "Can you tell me the reasons for this"?

"Human beings are cutting down trees and destroying the forest. Where can who depend on the forest go? Day by day our habitat is being reduced" said the elephant.

The lion invited the spotted deer to speak next.

The natural environment in which the organisms live is called the habitat.

Fact

Our National Animal is the tiger

Immediately the spotted deer came leaping forward and said " Rainfall is decreasing, water resources are dwindling, the climate is changing, global warming is taking place. Animals are dying of unknown diseases. Dry lands are increasing. Some animals have become extinct and many are on the verge of extinction. The water cycle has been disturbed. Biosphere is polluted. There is a shortage of food.

Do you know?

The wild animals are entering human habitation due to the reduction of their environmental habitat.

The above ecological problems have caused the reduction of our habitat and the decline of our species," stated the spotted deer.

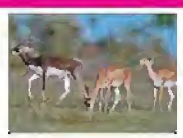
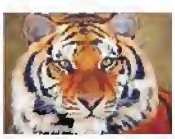
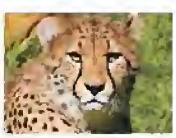
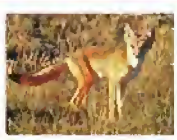
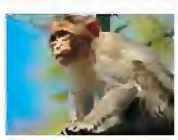
The lion ordered everyone not to leave their habitat and enter into human habitat. Then the lion called the giraffe to the stage to explain the reasons for his order.

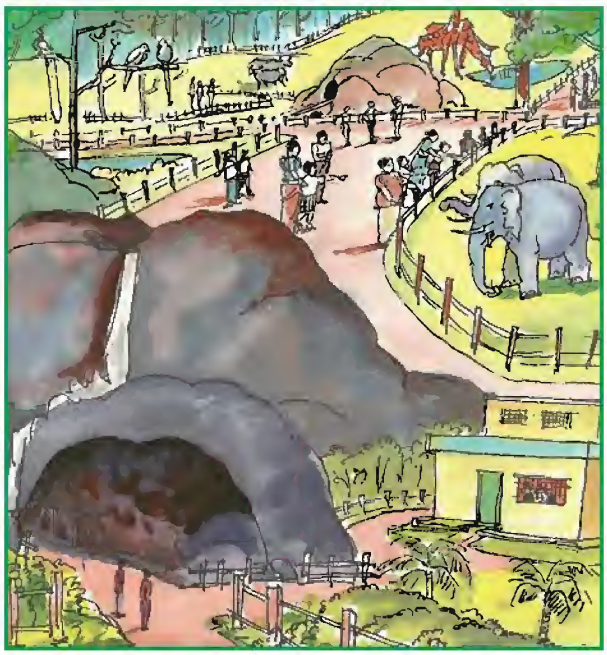
The giraffe bowed down and started to explain. "Human beings have now started to realize the importance of forests. They are planting new trees and are giving importance to the protection of living organisms. To save living things they have established Sanctuaries and National parks. They have become kind and are now taking care of animals.

They also give importance to the ecological balance" said the Giraffe. The rabbit exclaimed "Sanctuaries!". "Yes, it is a protected place for us. Mundanthurai is the sanctuary for me", said the tiger.

A sanctuary is a protected environment where animals can live and reproduce .

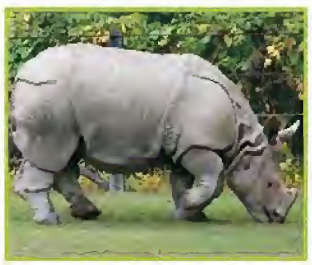
The giraffe read out a long list of sanctuaries available for other animals in Tamilnadu.

S.No.	Animals	Sanctuary / National park
1.	 Deer	Guindy National Park, Chennai District
2.	Birds	Vedanthangal, Kancheepuram District
3.	Elephant, Wild bull	Mudumalai, The Nilgiris
4.	 Tiger  Panther	Anaimalai, Coimbatore District
5.	White Tiger  Jackal  Monkey	Arignar Anna Zoological park, Kancheepuram District



Do you know?

- To develop an environmental awareness among people, schemes like social forestry. planting of saplings during school and government celebrations, is encouraged.
- There are 17 wild life sanctuaries and 66 National parks in India.



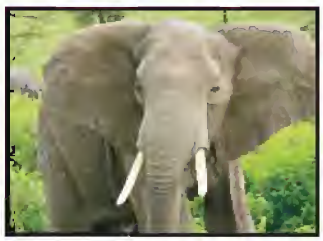
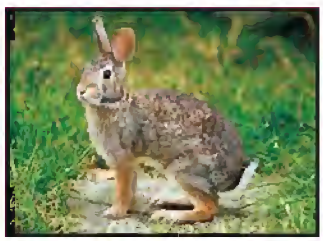
The programme co-ordinator announced that it was time for a break. After the break, the lion asked the rhinoceros to lead the session.

The topic for the session was "Cruelty Against Animals". The deer said, "people are hunting us for our skin, flesh and horn".

Facts

- The first National Park found for the safety of wild animals in India is Corbett National Park in Uttaranchal.
- SPCA – Society for Prevention of Cruelty to Animals

What would have been the grievances presented by the following animals while discussing the topic "Animal cruelty?".

S.No.	Animals	
1.		
2.		
3.		
4.		

The tiger delivered the vote of thanks at the end of the conference. Then all the animals returned to their habitat happily and peacefully with the satisfaction of having successfully completed the conference.

Do you know?

- 1952 – Indian Board for wild life was formed.
- 1955 – Celebration of Wild Life Week was introduced.
- 1972 – Wild Life Protection Act comes to force.
- 1983 – National Wild Life Action Plan was introduced.
- 1986 – Establishment of National Parks and Biosphere Reserves by the Government of India.

EVALUATION

I. Choose and write the correct answer :

1. Where is the sanctuary for Tigers in Tamilnadu?
   a) Kalakadu b) Mundanthurai
   c) Vedanthangal d) Guindy
2. When did the National Wild Life Action Plan start?
   a) 1952 b) 1955 c) 1983 d) 1986
3. Where is the sanctuary for deer in Tamilnadu located?
   a) The Nilgiris b) Anaimalai c) Mudumalai d) Guindy

II. Fill in the blanks :

1. The place where organisms live naturally is called _____
2. Lack of rain leads to the increase of _____
3. The number of National Parks in India is _____
4. To protect the animals which are on the verge of extinction _____ _____ and _____ were established.
5. Our National Animal is _____

III. Write True or False :

1. Sanctuaries are established to protect wild animals.
2. The environment will be polluted by the destruction of forests.
3. India's first National Park was Corbett National park.
4. "The Wild life Protection Act" has been implemented in 1952.

IV. Match the following :

Gir Forests

Mudumalai

Mundanthurai

Vedanthangal

Guindy

V. Answer in one or two sentences :

1. What is a sanctuary?
2. What is a habitat?
3. Where is the bird sanctuary located in Tamilnadu?

4. Mention the names of any two National parks in Tamilnadu?
5. Mention any two factors that cause the reduction of animal habitat.

VI. Answer in detail :

1. What are the disadvantages of the destruction of forests?
2. Enlist National parks found in India and the animals which are living in them.
3. What are the steps taken by the government to protect animals?

VII. Assignment :

1. Collect the pictures of some wild animals and sanctuaries and prepare an album.
2. Draw a picture on kindness towards animals.

3. Butterfly and Honey Bee

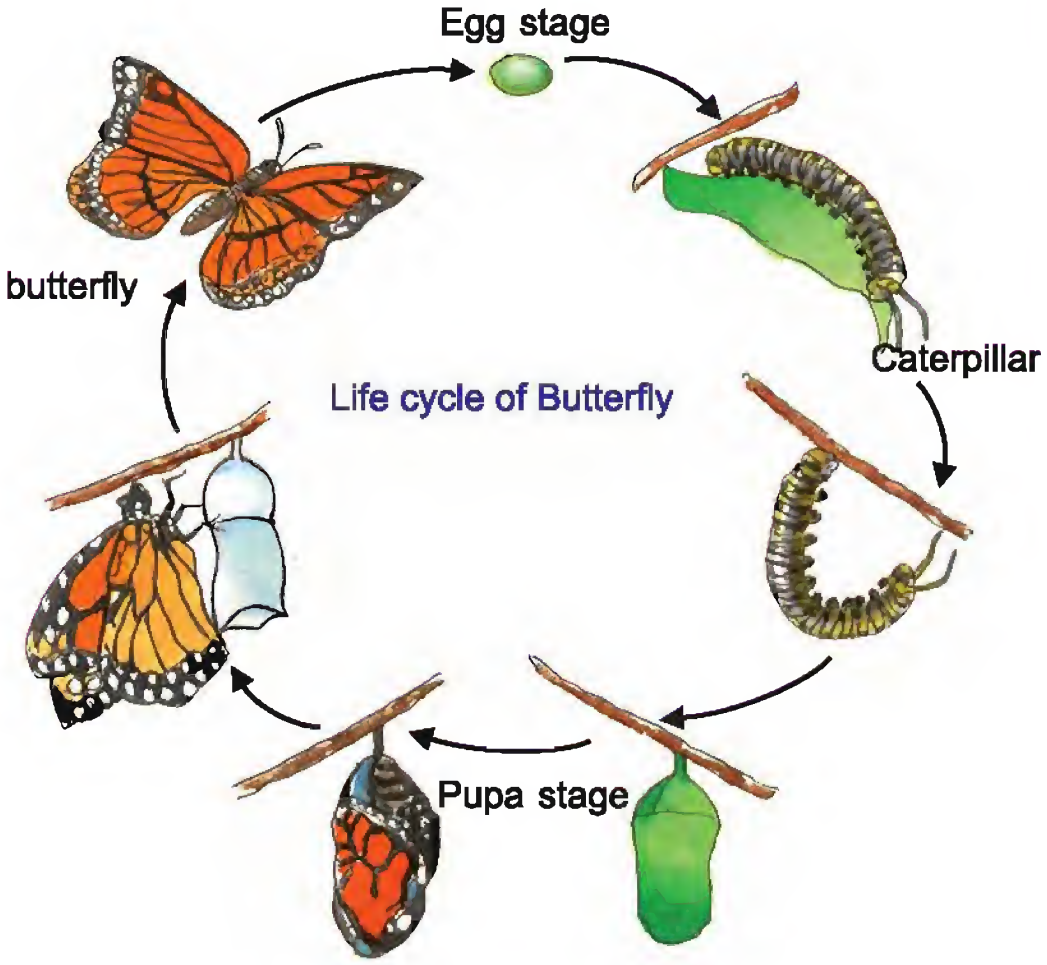
Malarvizhi saw a butterfly flying over a rose flower in her garden. She went towards it and sang.

Butterfly, butterfly, so colourful and free
From flower to flower you flit and flee
What do you seek as you flutter your wings,
In my garden full of lovely things?
I see you kiss every flower that is in bloom
While fluttering about here and there as you roam!
Oh! unexpected guest to my garden plants,
Be my friend and tell me your wants
Tell me of your travels on earth
And enlighten me of your wonderful birth.

The butterfly answered, "I will tell you my life history. Listen!"

My name is butterfly. I am an insect who flies freely everywhere. I have many beautiful colours. My species is found throughout the world. My life story is a unique one.

Most animals give birth to young ones. Birds hatch their eggs and multiply. But I, the butterfly, have to go through four stages before I become fully grown.



The mature female butterfly searches for a suitable place to lay its eggs. Most often it lays its eggs on the lower side of leaves. The egg is my first stage.

The eggs hatch after five days and I come out as a caterpillar. I eat the nearby leaves in plenty. Within a few days, I consume food that is more than my body weight. During this stage I am green or grey in colour. I have coloured stripes on my body. This is my second stage.

After a few days, I build a covering around my body. In this stage I am completely inside the covering called cocoon. This is called the pupa stage. During this stage, a lot of wonderful changes take place in my body. Body organs and wings develop. This is my third stage.

After the completion of my growth, I break open the cocoon and come out as a beautiful butterfly. This is my fourth stage.

Facts

- Assam and Sikkim states in India are referred to as havens for butterflies.
- The "Queen Alexandria" butterfly seen in New Guinea is the largest in the world. (Length:25 cms)

After passing through the four stages ,I am now as you see me, a beautiful adult butterfly courting the pretty flowers in your garden. Thus the butterfly ended the story of its life.

"Indeed, your story is unique! Thank you!" said Malarvizhi.

The four stages of butterfly

1. Egg stage
2. Caterpillar Stage
3. Pupa Stage
4. Adult Butterfly.

Observe

(with the help of your teacher)

- Take an empty wide mouthed glass bottle.
- Place Calotropis leaves, with butterfly eggs, inside the bottle.
- Tie the mouth of the bottle with a piece of fine cotton cloth.
- Observe carefully everyday till the adult butterfly emerges.

Do you know ?

- A butterfly has six legs.
- Taste buds are found on the legs of a butterfly.
- Butterflies have no eyelids or eyelashes.
- Butterflies sleep at night with their eyes open.
- Butterflies communicate with each other through body movement, colour and sound.

Malarvizhi shared her knowledge of the butterfly with her uncle..

"Uncle, I heard that you are keeping honey bees in your garden.Will you please tell me about the life of bees ?" "Yes!" answered her uncle.

Her uncle sang a song and explained the facts about bees and their activities.

The song went like this

"What are you busy with, O vibrant bee ?
I am busy collecting honey with glee !
What do you do with the collected honey O beautiful bee ?
I preserve it in my home sweet home; come and see !
What do you do in your home sweet home, O my busy bee ?
I enjoy the taste of honey, want to join me !
What will you do if I destroy your home, my lovely bee?
Then very violent will my nature turn to be !
I'll sting and sting and chase thee.

Honey bees are social insects. They live in a colony. They are very active and hardworking. They help in cross-pollination. They collect nectar. Keeping of honey bee is known as apiculture and it is very beneficial.

In a honey comb, there are three types of honey bees.

Queen Bee

Male Bee

Worker Bee

Queen bees are big in size. There is only one Queen bee in a hive.

The maximum life-span of the Queen bee is about two years.

Male bees are smaller than the Queen bee, but bigger than the workers. They help only in reproduction. They are also called the Drones.

Do you know?

The honey bees flap their wings 200 - 230 times per second. This produces a buzzing sound.

The Worker bees do a lot of work, such as constructing the honey comb, collecting the nectar, protecting the comb from enemies. The worker bees are very active sterile females. The maximum life span of the worker bee is 28-38 days.

Some kinds of bees are

1. Mountain bees 2. Little bees 3. Indian bees

Uses of honey.

Honey is very tasty. It has medicinal properties, too. Pepper added to honey and ingested cures cold and cough. It has high nutritional value. It is a good cure for anaemia. It also heals ulcers in the intestines.

Apiculture is a good cottage industry", completed Malarvizhi's uncle.

The composition of honey is	
Water	17%
Glucose	31%
Fructose	38%
Maltose	10%
Albumin	2%
Inorganic Salts	1%
Vitamins and Calcium	1%

Do you know?

- To collect 425 gms of honey, the honey bees have to suck the nectar of 20 lakhs of flowers.
- Honey does not get spoiled for years.
- There are 3200 calories of energy in 1kg of honey.
- Tamilnadu takes the prime place in the production of honey among the Southern states.
- At Marthandam, in Kanyakumari District, more than 25 million kg of honey is collected per year

Fact

The honey bee is an example for social behaviour, activeness, leadership and teamwork.

EVALUATION

I. Choose the right answer :

1. There are _____ stages in the life history of butterfly.
   a) one b) three c) four d) two

2. In the life history of butterfly, the third stage is _____
   a) pupa b) caterpillar
   c) egg d) Adult butterfly

3. The wings will grow at the _____ stage of butterfly.
   a) caterpillar b) egg c) pupa d) adult

4. How many types of honey bees are found in honey comb?
   a) 1 b) 3 c) 4 d) 2

5. Which is the largest honey bee?
   a) Queen bee b) Male bee
   c) Indian bee d) Worker bee

II. Fill in the blanks :

1. _____ is the biggest butterfly in the world.
2. Butterfly lays its eggs on _____.
3. Male bees are used for _____.
4. _____ district stands first in the production of honey in Tamilnadu.
5. Worker bee is _____.

III. Write True or False :

1. Butterfly lays eggs and hatches them.
2. Butterfly completes its life cycle in third stage.
3. Butterfly has grey stripes on its body in its fourth stage.
4. Bees help in cross pollination.
5. Honey is a best medicine for anaemia.

IV. Match the following :

1. Egg	a) third stage
2. Pupa	b) high nutritive value
3. Honey bees	c) protecting the comb
4. Worker bee	d) first stage
5. Honey	e) busy in nature

V. Answer in one or two sentences :

1. Name the stages in the life cycle of a butterfly.
2. Classify the honey bees.
3. State the composition of honey.
4. Enumerate the uses of honey.
5. What lessons do we learn from the honey bee?

VI. Answer in detail :

1. Draw the life cycle of a butterfly and explain.
2. "Honey bees are social insects" – Elaborate.

VII. Project :

1. Collect different insects and prepare an album.
2. Visit an apiculture cottage industry.

4. Space Travel

It was a summer night. The time was 8 p.m. Tharanya finished her supper and ran towards her Grandfather's cot. The cot was kept on the veranda. She was lying on the cot relaxing and gazing at the beautiful night- sky, twinkling stars, and the shining moon. Wow! How beautiful the sky is at night! While she was admiring the sky, an aeroplane flew overhead like a firefly. Looking at the plane, she slept and dreamt. As usual, she went to the school the next morning. During the first period, the Science teacher asked the students about their dreams for the future. Each one shared his/her wishes. Tharanya's turn came.

She said, "Sir, at least once, I want to fly around the sky by plane. I want to touch the twinkling stars and moon. I want to go around the moon. I would like to fly higher and higher to see what is above the sky".

The teacher wished the students success in fulfilling their dreams . Added to that, he also praised Tharanya for her desire to explore and he started to relate some basic information on space travel. Rockets and Satellites are the results of the questions posed by man such as, "Why can't man travel to the beautiful space? What is found there?"

Space Research

The wide place above the atmosphere is called space. Numerous constellations, planets and particles are found in space.

In 1957, Russia sent the first satellite called Sputnik.

The body moving in an orbit around a planet is called a Satellite.

Artificial satellites are man made objects which revolve around the earth.

Do and See – Rocket

Things needed: Paper balls, Colour papers, Gum and Cello tape.

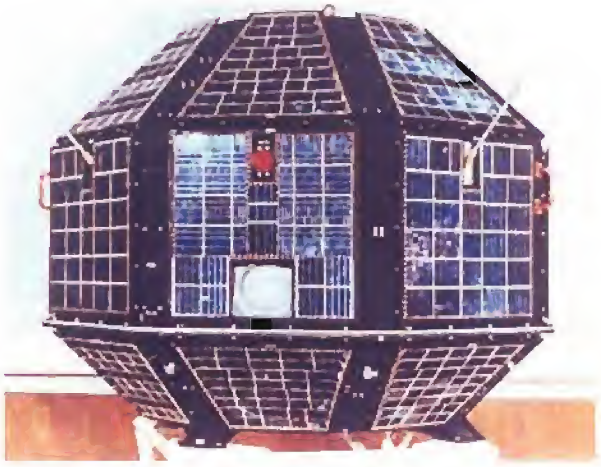
ISRO is the Indian Space Research Organization. It was established in Bangalore in 1969.

The rocket launching pad in our country is at Sri Harikotta in Andhra Pradesh. It is from here that satellites are launched.

The space research centres in our country have launched many satellites. The satellite Aryabhatta from India was launched in 1975. India is one of the leading countries with regard to space research.

The vehicle which takes the satellite to space is called a rocket.

Aryabhatta and Baskara are the famous astro-physicists who lived in India centuries ago.



Aryabhatta Satellite (1975)

Laika is the name of the first dog which was taken to space. Likewise, animals like monkey, rat, cat, frog, spider, tortoise have been taken to space for research purpose.

Men have travelled in space. Yuri Gagarin of Russia was the first man to go to space in 1961.

Rakesh Sharma was the first Indian to go to space.

Women astronauts, like Kalpana Chawla and Sunitha Williams have also gone on space missions. It is a matter of pride for us that both these astronauts are of Indian origin.

Man has visited even the moon. On July 16,1969, three American astronauts Neil Armstrong, Edwin Aldrin and Michael Collins travelled to the moon successfully.

India also has a plan of sending man to the moon. As a preparation , on October 22, 2008 India launched a satellite Chandrayan 1. This satellite has found water on the surface of moon.

The basic motivation behind launching Chandrayan 1 is to widen our knowledge regarding the moon which is the one and only natural satellite of the earth. Various satellites from different countries have been sent not only to the moon but also to other planets for research purposes.

Chandrayan 1

Fact

The Moon takes 27.32 days for one rotation on it's axis. The Moon takes the same duration of time to go around the earth. Hence, we can see only one side of the moon from whichever the part of the earth we are in.

Who am I?

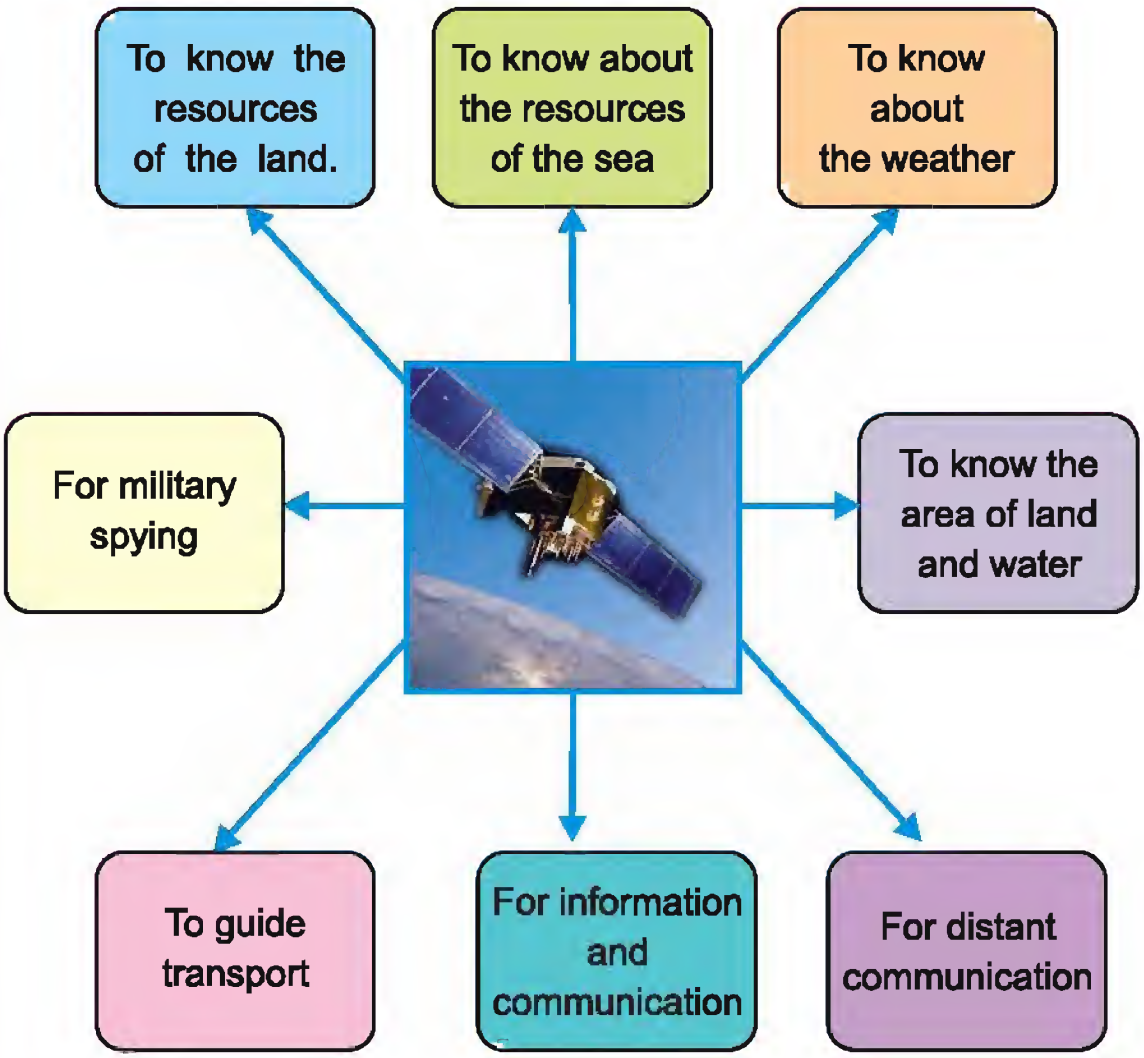
Morning, evening, day and night
I will show you pictures of delight
Field, forest, and garden yonder
You and I shall go and wander

I will show you mountains, meadows and trees
And anything else you please
Waves, seas, fish and all things grand
I will transmit to you on land.

Wild animals, birds, sparrow and mouse
I will show you inside your house.
World news, current events, I will display
To your home everyday.

Now so many satellites revolve in space.

- Why are there so many satellites?
- Do you know what their uses are ?



Let us also dream like Tharanya and realize our dreams.

EVALUATION

I. Choose the right answer :

1. The first astronaut who travelled to space
   a) Yuri Gagarin b) Baskara
   c) Neil Armstrong d) Kalpana Chawla
2. The year in which the first satellite was sent from India
   a) 1969 b) 1957 c) 1975 d) 1956
3. Where is the rocket launching pad in our country located?
   a) Kalpakkam b) Chennai c) Sri Harikotta d) Delhi
4. The vehicle which carries satellite is
   a) Car b) Train c) Plane d) Rocket
5. The first satellite sent to space was
   a) Baskara b) Aryabhatta
   c) Sputnik d) Chandrayan.

II. Fill in the blanks :

1. Indian Space Research Organization is in _____
2. The first Indian who travelled to space was _____
3. The first woman of Indian origin who went to space was _____
4. Aryabhatta was sent to space in the year _____
5. The country which sent the satellite Sputnik, was_____

III. Write True or False :

1. Chandrayan1was the first satellite sent to the moon.
2. Rakesh Sharma was the first man who went to space.
3. First satellite was sent in the year 1975.
4. In our country, the rocket launching pad is located in Sri Harikotta.
5. Indian Space Research Organization is in Delhi.

IV. Match the following :

1. Sputnik	a) 1961
2. Yuri Gagarin	b) 1969
3. Aryabhatta	c) 2008
4. Neil Armstrong	d) 1957
5. Chandrayan 1	e) 1975

V. Answer in one or two sentences :

1. What is a satellite?
2. Write a short note on space.
3. Mention the names of a few astronauts.
4. What is a rocket?
5. Mention the names of a few Indian astro physists.

VI. Answer in detail :

1. What are the uses of satellites?

VII. Assignment :

1. Collect interviews of some astronauts .

VIII. Project work :

1. Collect pictures and information of satellites.
2. Write the life history of any two astronauts.

5. Water

Simon walked happily in the rain. He was drenched. He looked up at the sky. Rain drops were falling ... So many drops from the sky? Where is this water stored in the sky? How did it go there? He ran to his mother to find answers.

His mother took him to the kitchen and asked him to observe water boiling in a vessel. She pointed out how water changes into vapour. She closed the vessel with a plate. After some time she removed the plate from the vessel. There were water drops on the plate.

In the same manner, water from the surface of water bodies like rivers, lakes, pools, ocean evaporates due to the heat of the sun. Then they are changed into clouds. When the clouds are cooled, rain drops are formed.

Shall we discuss the following facts with our friends?

- When wet clothes are dried, what happens to the water in them? Where do the water go ?
- How does the mopped floor get dry ?
- How do washed vessels get dry ?

Observation

_____

_____

_____

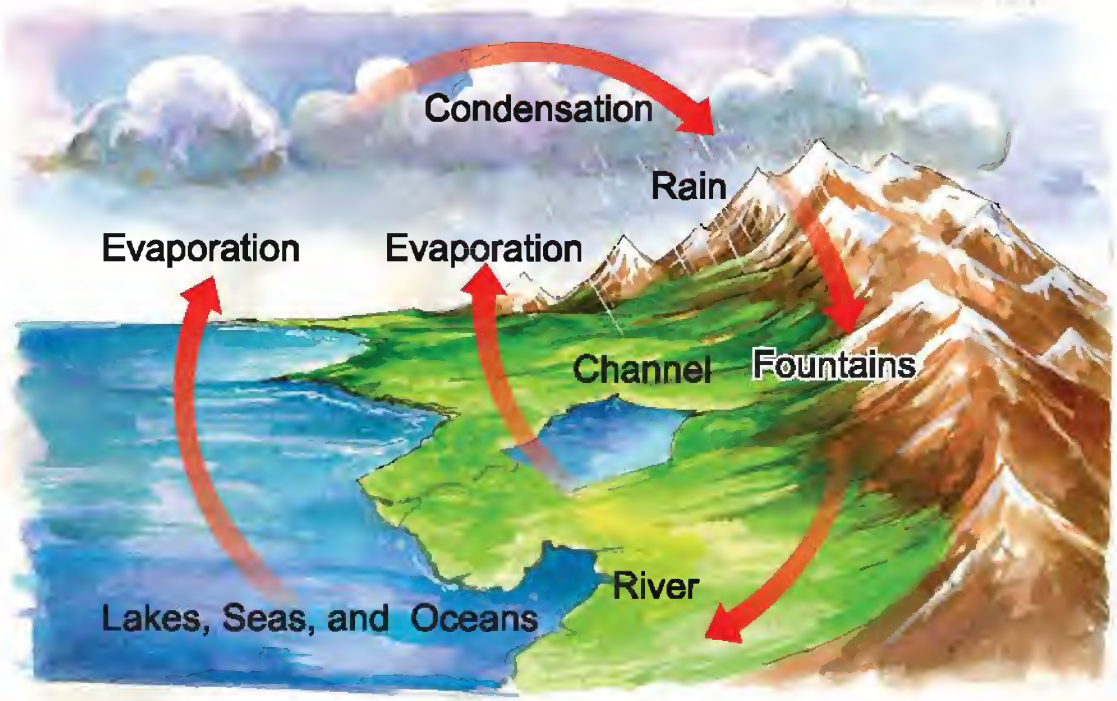
Evaporation

The process of water changing into vapour due to heat is called evaporation. It takes place at all temperatures.

The salt we get is due to evaporation of sea water.

Water cycle

When we heat water, it evaporates. Due to the heat of the sun, the water on the surface of rivers and seas evaporates .Where does this evaporated water go ? What happens when it gets cooled ? Look at the figure below and find out how rain is formed.

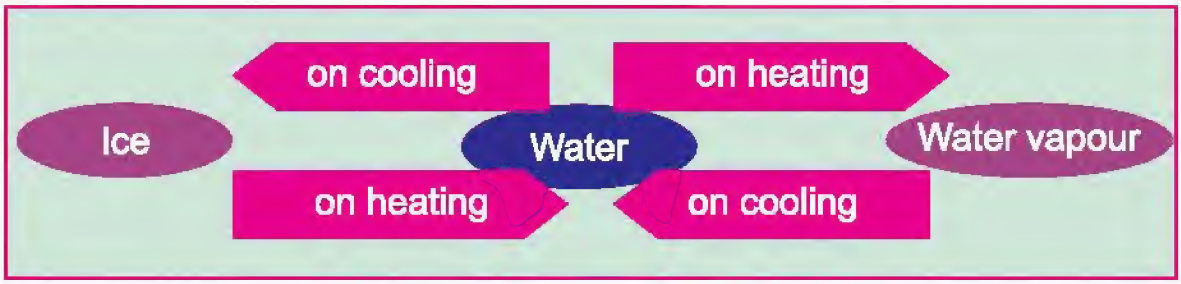


Water on the earth evaporates due to the sun's heat and change into rain clouds. When these clouds are cooled, they fall to the earth as rain. This process is called water cycle.

The three states of water

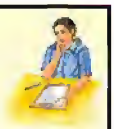
Water is found in three states.

1. Solid state - Ice
2. Liquid state - Water
3. Gaseous state - Water vapour



Pure water is a liquid; it is colourless, tasteless and odourless under normal conditions

Fact



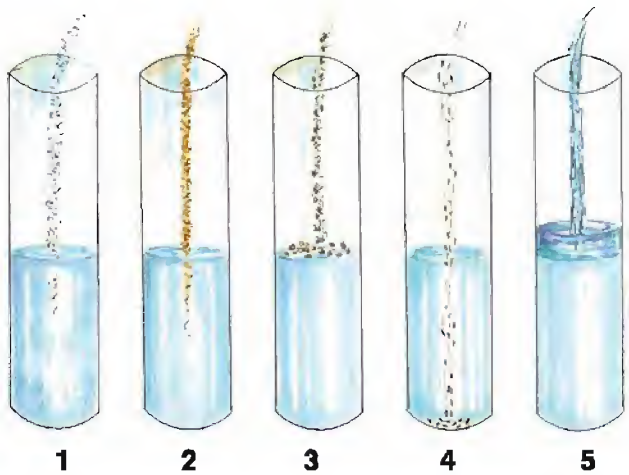
When the clouds are super cooled, the rain drops freeze to ice and fall as hail stones.

To Think:

White-washing work was going on in Simon's house. Simon was observing the painter mixing quick-lime powder with water. After some time, he also observed that the powder formed a precipitate in the bucket. Meanwhile Simon's mother came bringing him a glass of milk. She added sugar to the milk, mixed it and gave it to Simon to drink. When Simon tasted the milk, he found it sweet. He noticed that all the sugar had dissolved in the milk. Why the quick-lime powder did not dissolve in the water, whereas the sugar dissolved in the milk? What is the reason for this?

Do and see

Take five test tubes. Fill half of each test tube with water. Add a little sugar to the first; sawdust to the second; salt to the third ; baking soda to the fourth and coconut oil to the fifth test tube. Do all these substances dissolve in water? Note down your results in the tabular column given below.



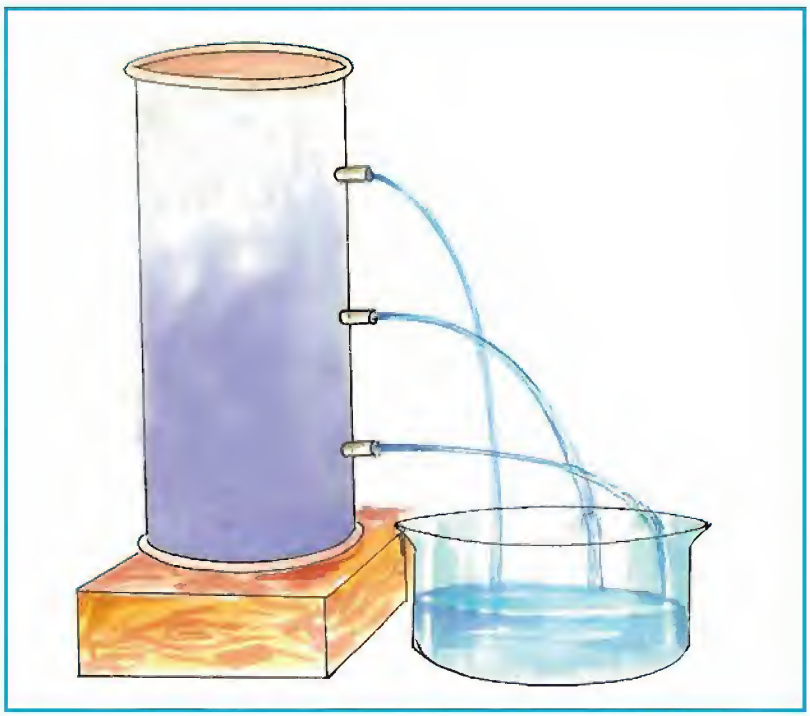
Things	Dissolve / Does not dissolve
Sugar	_____
Saw dust	_____
Salt	_____
Baking soda	_____
Coconut oil	_____

Water - universal solvent

Some substances do not dissolve in water but most do. Hence water is called a universal solvent

Do and see

Take a cylindrical vessel. Make three holes of the same size, as shown in the figure. Close the holes with pieces of cork. Fill the vessel with water. Open the holes simultaneously.



From which hole does water fall closest to the box?

_____

From which hole does water fall farthest, from the box?

_____

What is the reason for this difference?

Water exerts pressure. Water pressure increases with depth.

Water - A common resource for all

"No world without water", said Thiruvalluvar. Water is the basis of life. Human civilization grew only along the river belts.

Though most parts of the earth is covered by water, potable water available is very little. Of all the water resources available on the earth, 97.3% is from the sea. Of the remaining 2.7%, only 1% water is available for human consumption as drinking water.

Do you know?

March 22 is celebrated as world water day.

Water is a wonderful gift of nature. For human consumption water is available from rivers, ponds, lakes, wells and underground water belts. Rain is the basic source for all these water bodies. In ancient times, people considered the free distribution of water to be a noble deed.

For your attention

Don't waste water in schools, houses and road side taps

All the natural resources of the earth are inter-linked. If any one of them is affected, it affects the entire life on earth.

In future, the nation with good water resources alone would be the considered fully developed.

Water resources do not belong to any individual person, race or state or nation. It is common to all living beings. No one can own the air, sunlight and water.

Look at the clouds. They travel to every part of the earth. The water we get from clouds is common to all. So, "water for all" is to be our slogan.

Save water - Saving water is our duty.

EVALUATION

I. Choose the right answer :

1. The World Water Day is _____

   a) March 22 b) April 22 c) May 22 d) August 22

2. _____ is a natural resource

   a) aeroplane b) plastic c) water d) fan

3. _____ is a universal solvent

   a) milk b) water

   c) kerosene d) lemon juice

4. The gaseous form of water is _____

   a) gas b) water vapour c) ice d) water

5. Human Civilization grew only along the _____

   a) seashore b) river belts c) forest d) home

II. Fill in the blanks :

1. The solid state of water is _____.
2. _____ is the basic sources of water.
3. Distributing water as charity is a _____.
4. Water is a _____.

III. Write True or False :

1. Water becomes ice due to the sun's heat.
2. The very basis of life is water.
3. Water scarcity is caused by the destruction of water bodies.
4. It is our duty to save water.
5. Evaporation takes place at all temperatures.

IV. Answer in one or two sentences :

1. What is called evaporation?
2. What are the three states of water?
3. Water is a universal solvent? Explain.
4. State any two properties of water
5. How are rain drops formed ?
6. Why does it take long time to dry clothes during the rainy season ?

V. Answer in detail :

1. Water is common to all. Explain.
2. Water exerts pressure. Prove it with an experiment.

6. Air

A village festival: Elackia and Mala are sisters. Their grandmother had come for the village festival. She purchased balloons for them. They were very happy and blew the balloons bigger and bigger, competing with each other. Suddenly, Elackia's balloon burst. She was very disappointed. How did the balloon break? What happened to the air inside the balloon? She wondered. Along with Elackia, shall we also search for that air?

From the pictures given below list some objects filled with air .

_____ _____

_____ _____

_____ _____

Properties of air

Shall we know by experiment?

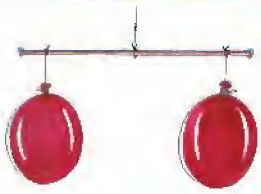
Experiment 1

Materials needed : Two balloons, a stick 12 inches long, a length of thread, a pin.

Procedure :

Tie a piece of thread to the middle of the stick. Tie two balloons, filled with equal amount of air, at both ends of the stick. Hold the stick by the thread like a balance. What do you observe?

Prick one of the balloons with a pin. What do you observe now?

S. No.	Experiment	Observation
1.		stick is balanced
2.		the side of the stick with deflated balloon goes up and the other side is down.

Reason :

The weight of both the balloons are the same and hence the stick is in a balanced position in stage I.

But the weight of the balloon filled with air is more than that of the empty balloon in stage II.

Conclusion :

Air has weight.

Experiment 2

Materials needed : A glass tumbler, a square piece of cardboard (as shown in the figure), and water.

Procedure :

Take the glass tumbler and fill it with water upto the brim. Hold it with your left hand. Close the mouth of the tumbler with a cardboard and press it with your right hand. Holding the cardboard firmly with your right hand, invert the tumbler. Now carefully remove your right hand.

S. No.	Experiment	Observation
1.		_____ _____ _____
2.		_____ _____ _____

Reason :

The cardboard does not fall even if the right hand is removed from it due to the pressure of air.

Conclusion :

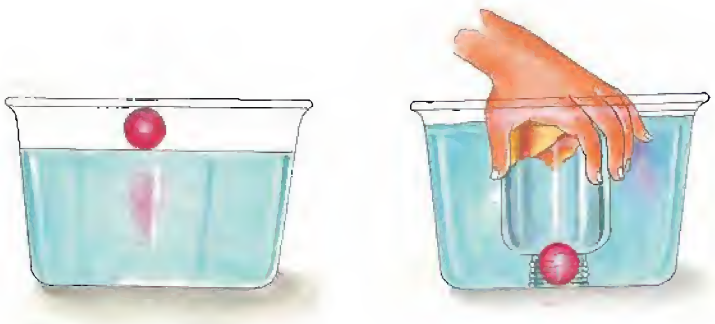
Air exerts pressure.

Experiment 3

Materials needed : Empty jar, a light weight ball, pieces of paper, a glass tub filled with water.

Procedure :

- Keep a light-weight ball floating on the surface of water in the glass tub.
- Keep the pieces of paper fixed to the bottom of the jar.
- Hold the mouth of the jar over the floating ball and press it down till the mouth touches the bottom of the tub.



Observations :

- Water did not enter into the jar.
- The pieces of paper kept at the bottom of the jar did not get wet.
- The ball which was floating is now at the bottom.

Reason :

The air present in the jar did not allow the water into the jar.

Conclusion :

Air occupies space.

Do and see

Keep a lighted incense stick at the corner of your house.

What do you notice a little later?

The smell of incense fills the entire house.

Air spreads in all directions.

Uses of gases present in air

Oxygen is used for the survival of all living organisms. When we breathe, we inhale oxygen and exhale carbon-di-oxide. People who climb mountains, those who dive into the deep sea, and the researchers going to space all carry cylinders filled with oxygen in order to breathe.

- Carbon-di-oxide is used for photosynthesis in plants.
- Nitrogen is used as natural manure.
- Inert gases (neon, argon, crypton, zenon) are used in serial bulbs to impart bright colours.

Windmills

Large number of windmills have been erected in places like Aralvaimozhi and Kayatharu for generation of electricity.

Applications of Air pressure in our daily life

- To fill medicine in injection syringes.

- To fill ink in pens.

- To suck cool drinks using a straw.

- To construct artificial fountains.

- To operate hand pumps.

- For the working of sail boats, parachutes and kites.

EVALUATION

I. Choose the right answer:

1. The gas that is largely present in air is _____
   a) Hydrogen b) Nitrogen
   c) Oxygen d) Carbondioxide
2. The gas used for respiration of living things is _____
   a) Nitrogen b) Oxygen
   c) Inert gases d) Carbondioxide
3. The gas used in photosynthesis is _____
   a) Inert gases b) Oxygen
   c) Nitrogen d) Carbondioxide

II. Fill in the blanks:

1. Air has _____.
2. Windmills are found in large numbers at places like _____ and _____.
3. The gas used for the production of manure is _____.
4. _____ and _____ work on principle of atmospheric pressure.

III. Write True or False:

1. Air pressure is used to form artificial fountains.
2. Air does not exert pressure and has no weight.
3. Air occupies space.
4. Air can spread everywhere.
5. Living things use carbondioxide for respiration.

IV. Match the following :

1. Nitrogen	a) Electricity
2. Atmosphere	b) Decorating lamps
3. Windmills	c) Natural manure
4. Inert gases	d) Hand pump
5. Atmospheric pressure	e) Blanket of air.

V. Answer in one or two sentences :

1. Define atmosphere.
2. Why do people who climb mountains carry oxygen cylinders?
3. State any two properties of air.
4. Name the places where windmills are found in Tamilnadu.

VI. Answer in detail :

1. What are the applications of air pressure in our daily life?
2. Prove that air has weight by an experiment.
3. Prove that air exerts pressure by an experiment.
4. Show by an experiment that air has the property to occupy space.

7. Food

Dharani ate the fruits her mother gave her. Then she drank milk. She went upstairs to study. There she got the whiff of a nauseating odour... What is there? She looked here and there to find out the cause of the bad smell. She found the tumbler of milk which her mother had given her to drink two days back. She had forgotten to drink it. The stench was from this.

What caused bad odour from the milk? – examine

Food will be spoiled if it is not prepared, preserved and handled in a proper way.

Symptoms of food spoilage

- In fruits and vegetables - growth of fungi.
- In tinned food items - growth of fungi and bad odour.
- Refrigerated food items should not be kept outside the refigerator for a long period. If they are kept for long in the open, at room temperature, the bacteria and fungi will grow and spoil the food items.

The diseases caused by the consumption of spoiled food items.

- Food poisoning
- Diarrhoea
- Amoebic dysentery
- Indigestion
- Stomach ache.
- Fever

The food items which can decay easily can be preserved by various techniques. Shall we learn more about the need for food preservation?

- All food items are not available in all seasons. Seasonal foods can be preserved for all seasons.
- Avoid wastage of food.

- Food items will remain fresh for a longer period of time if they are preserved in their natural state..
- Preserved food items can be sent to distant places and countries with out spoilage.

From ancient times we have been using various methods to protect food items from microbes.

A few are

- Salting
- Drying
- Pickling
- Freezing
- Refrigeration

Food preservatives

Salt, Sugar, Oil and honey are good, healthy natural preservatives.

Pasteurization of milk

Milk is boiled at 60°C for half an hour and suddenly chilled. By this method, milk is pasteurized and preserved for a longer period.

Drying and Dehydration

Fresh vegetables, fruits, meat and fish are dried and preserved by spreading them out in the sun. Salting is very essential before drying, because common salt protects food items from micro organisms.

Facts

- Vinegar and citric acid are used to prevent food spoilage.
- Louis Pasteur discovered pasteurization method of preserving milk.
- In Tamilnadu, Pasteur Institute is located at Coonoor.

Food storage

Food is stored by two methods

- Dry storage
- Cold storage

Grains can be stored without spoilage for a longer period by dry storage.

Vegetables and fruits can be preserved at low temperature in refrigerators. The preserved foods remain fresh without spoilage.

A few methods of protecting food :

- Cleanliness and hygiene in food handling is very important.
- Utensils and equipment used for preparation should be cleaned well.
- Cover the containers in which food is kept.
- Cooked and uncooked food should be preserved separately.
- Food should be cooked without destroying the nutrients.

Kitchen safety :

- We should not keep easily inflammable objects in the kitchen.
- We should not keep clothes and paper bags near the stove.
- Put off the stove before leaving the kitchen.
- We should take care that steam does not fall on us while opening the pressure cooker.
- We should not keep tablets or medicines in the kitchen.

- We should not allow children and pet animals in the kitchen.
- Don't keep spoilt food items in the kitchen.
- If the stove is not in use, the gas cylinder should be shut off.

EVALUATION

I. Choose the right answer :

1. _____ is a natural food preservative.
   a) Water vapour b) Common salt c) Vinegar d) Citric acid
2. The natural food, which does not get spoiled when it is preserved for a long period of time, is _____
   a) Vegetables b) Fruit juice
   c) Honey d) Butter
3. The Pasteur Institute in Tamilnadu is located at _____
   a) Ooty b) Conoor
   c) Kotagiri d) Kodaikanal
4. The thing which should not be kept in a kitchen is _____
   a) Salt b) Rice c) Tamarind d) Medicine
5. Pasteurization of milk was discovered by _____
   a) Flemming b) Louis Pasteur
   c) Edison d) Sir Isaac Newton

II. Write True or False :

1. Food items should be covered and kept in closed containers.
2. Do not eat spoiled food items.
3. Allow pet animals to enter into the kitchen.
4. We can have food items in all seasons by preservation.
5. Milk is preserved by Pasteur's method.

III. Answer in one or two sentences :

1. Write any four methods of food preservation.
2. Name any three natural food preservatives.
3. What is meant by Pasteurisation ?
4. What are the symptoms of food poisoning?
5. Name the nutrients present in food.

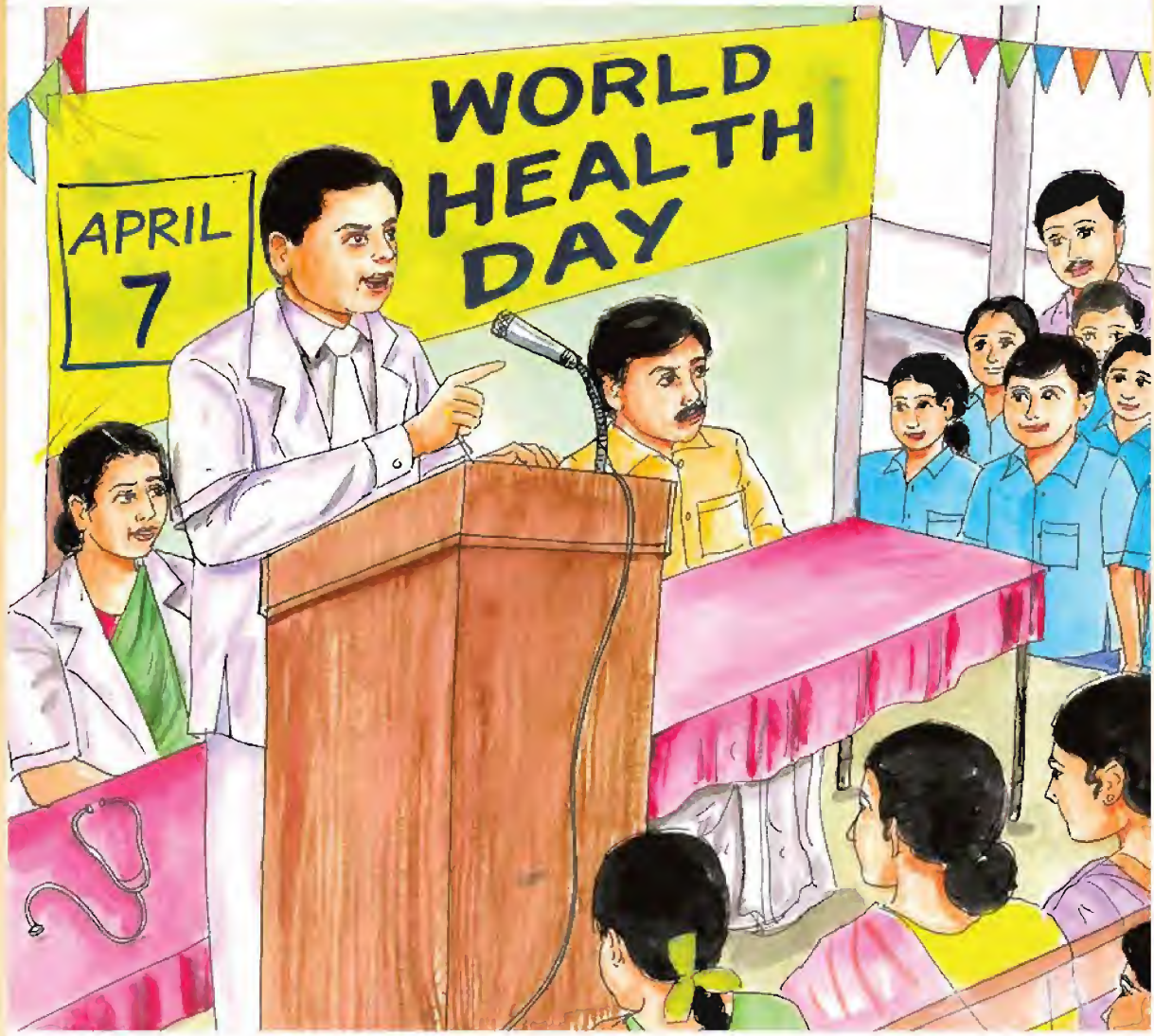
IV. Answer in detail :

1. Describe a few methods used to protect food items.
2. Why should food items be preserved?
3. Explain any two methods of food preservation.
4. What do you know about kitchen safety?
5. Find out and list the methods used by our ancestors to preserve food from spoiling.

V. Project :

1. Visit and collect information from a nearby milk processing centre.
2. Collect pictures of cold and dry storage food items and prepare an album.

8. Human brain and Sense organs



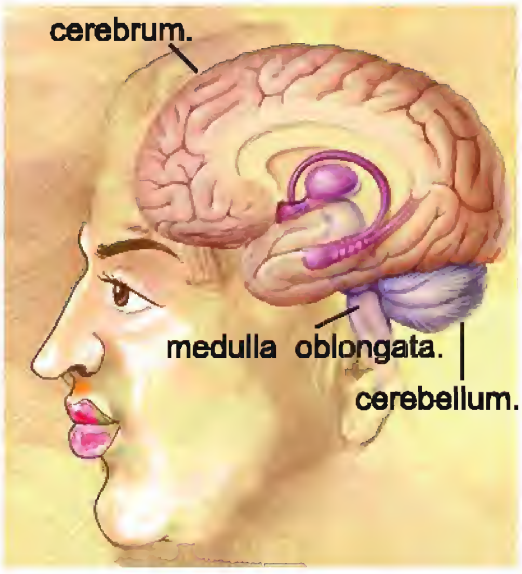
On April 7th, World Health Day was celebrated in a Panchayat Union Middle School, Puthukulam. The chief doctor of the Public Health Centre presided over the function.

After the inaugural function, a medical check-up was done to all the students in that school. In the afternoon, the doctor conducted an awareness programme for the students on health and hygiene. He explained about the brain and the sense organs through a power point presentation.

The Brain

Structure of the Human brain

- The brain is kept in a bony case called Cranium or Skull. It is made up of eight immovable bones.
- The brain is protected by three membranes called meninges.
- The brain is made up of tiny nerve cells called neurons.
- The brain is the centre of the nervous system.



The brain is made up of three parts.

1. The cerebrum.
2. The cerebellum.
3. The medulla oblongata.

The cerebrum

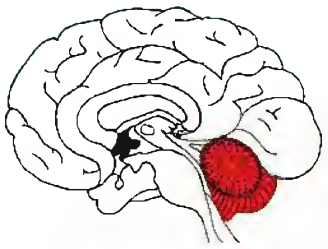
- It is the largest part of the brain.
- It is the centre of man's memory.

- Man is able to learn and understand languages and interpret signs and symbols with the help of the cerebrum.
- The right side of the cerebrum controls the left side of our body and vice versa.
- The cerebrum is responsible for intelligence, imagination and rationalisation.

cerebrum.

The cerebellum (Liittle brain)

- It lies behind the cerebrum.
- It co-ordinates the movements of the muscles of our body.
- It helps to maintain the balance of the body.



cerebellum.

Do you know?

1. Why does a man who has taken excess alcohol lose balance?

   Under the effect of alcohol, the cerebellum fails to control and co-ordinate the different muscles responsible for walking and talking. Hence a man who has imbibed excess alcohol loses balance and he is unable to walk and speak properly.

2. A passenger who sleeps while travelling in a bus falls back and forth. Why?

   When a person sleeps, the cerebellum is at rest and the balance of the body is not maintained. As a result, a passenger who sleeps while travelling in a bus falls back and forth.

The medulla oblongata

- It is also called the brain stem.
- It is called 'vital knot' because it controls breathing, heart beat and other involuntary muscles.
- It connects the brain to the spinal cord.

medulla oblongata

Functions of the brain.

- It is a decision maker.
- It controls all the movements of the body.
- It is responsible for human intelligence, memory and imagination

For the protection of brain

- Avoid alcohol and drugs.
- Take care if you have a head injury.
- Wear a helmet when you ride a two wheeler.

Do you know?

- The brain needs a continuous supply of oxygen for better functioning.
- The brain loses the ability to function if it does not get oxygen for more than 4 minutes.
- Enough sleep and healthy food increases the efficiency of our brain.

The Sense Organs

There are five sense organs in our body. They are

1. The eyes
2. The ears
3. The nose
4. The tongue
5. The skin

Importance of our sense organs

- Our sense organs serve as windows to the outside world.
- They collect information from the outside world and send it to the brain through nerves. The brain receives the information and orders for action.

The eyes

- The eyes are the organs of sight.
- They are safely placed in a bony socket.
- The eyelids and eyelashes protect the eye from dust particles and injuries.

Care of eyes

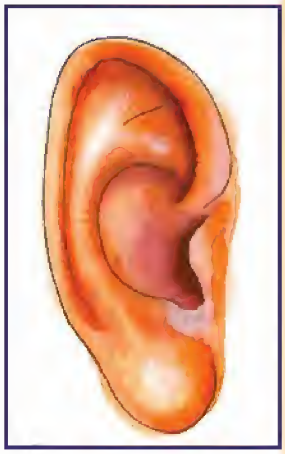
- We must wash our eyes with cold water everyday.
- We must not read in dim light.
- We must not look at dazzling lights.
- While reading and writing, we must keep the materials at a proper distance from our eyes.

- Do not rub your eyes when dust particles fall into it.
- Watching TV or playing video games for long hours causes damage to our eyes.
- Do not apply any medicine to your eyes without medical advice.
- Eat green vegetables, carrot and dairy products which contain Vitamin A. This vitamin is necessary for good vision.

For your attention:

If you are unable to read what is written on the blackboard in the classroom, inform your parents and consult an ophthalmologist. (Eye specialist)

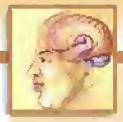
The ears



- The ears collect sounds from the surroundings and send it to the brain through the auditory nerves.
- We are able to distinguish different sounds.
- Our ears do the functions of hearing and balancing.

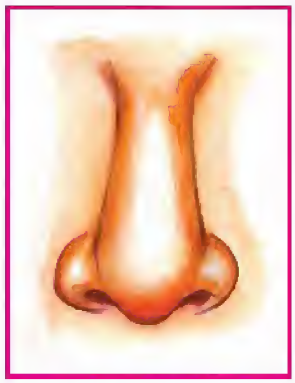
Care of ears

- Do not use sharp objects to clean your ears. It may damage the ear drum.
- Avoid listening to very loud music, especially through ear phones.
- Consult your doctor in case of any problem in the ear.



- Do not use any medication for your ears without a doctor's advice.
- Always clean your ears with the guidance of your parents.

The Nose



- The nose helps in breathing.
- The nose helps to distinguish different smells.
- The hairs inside the nose prevent the entry of dust into the lungs.

For your attention

Don't cover your face while sleeping.

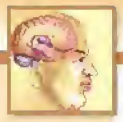
Care of Nose

- Do not insert unwanted things into the nose.
- When you are affected by cold , do not blow the nose very hard.
- Do not pick your nose in public.

Activity

Tie your friend's eyes. Bring a few articles near his nose and ask him to distinguish them by their smell.

[Jasmine flower, coffee powder, tea, rose, mango, lemon, etc.,]



The tongue

The tongue is an organ of taste.The taste buds present on the surface of the tongue are responsible for distinguishing different tastes like sweet, sour, salt and bitter.

Care of tongue

- We must avoid taking very hot beverages or food because it damages the taste buds.
- We must clean our tongue with a tongue cleaner everyday.

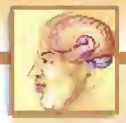
Activity

Place the following one by one on your tongue and experience the taste. Tabulate your answers.

Food items	Taste
Sugar	
Salt	
Lime juice	
Bittergourd juice	

The skin

- Skin is the largest sense organ.
- It is spread all over our body.
- It protects the underlying organs.
- It acts as a thermo-regulator.
- It is an organ of touch.



Care of skin

- Have bath everyday using soap.
- When we get wounds or rashes on the skin, we should take medicines as per a doctor's advice.
- Eating greens, carrot, papaya,mango, and cashewnut keep your skin smooth and bright.

Points to remember

- The brain is located inside the cranium.
- It is the centre of all activities.
- Cerebellum helps in movements and body balance.
- Medulla oblongata is the 'vital knot'.
- There are five sense organs – eyes, ears, nose, tongue and skin.
- The sense organs collect information from the surrounding and send it to the brain.
- There are taste buds on the surface of the tongue.
- The skin protects our body.
- We should take care of our sense organs to lead a healthy life.

EVALUATION

I. Choose the right answer:

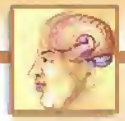
1. _____ is the largest part of the brain.
   a) cerebellum b) cerebrum c) medulla oblongata d) spinal cord
2. _____ is known as the brain stem.
   a) cerebrum b) neuron c) medulla oblongata d) spinal cord
3. The largest sense organ of our body is _____
   a) eyes b) ears c) skin d) nose
4. _____ is the organ of taste.
   a) skin b) tongue c) eyes d) cerebrum
5. _____ is necessary for good vision.
   a) Vitamin C b) Vitamin B c) Vitamin A d) Vitamin D

II. Fill in the blanks:

1. Cranium is made up of _____ immovable bones.
2. _____ helps to maintain the balance of the body.
3. _____ is known as the vital knot.
4. _____ controls all the systems of our body.

III. Write True or False:

1. Cerebellum is the centre of man's intelligence.
2. Medulla oblongata connects the brain to the spinal cord.
3. Watching TV or playing video games for long hours is good for the eyes.
4. Avoid listening to very loud music through ear phones.
5. There are taste buds on the surface of the tongue.



IV. Circle the odd man out :

1.	a) taste	b) hearing	c) smell	d) thinking
2.	a) Cerebellum	b) Cerebrum	c) Medulla	d) brain
3.	a) Thinking	b) balance	c) heart beat	d) sight
4.	a) cranium	b) tongue	c) nose	d) eyes

V. Match the following :

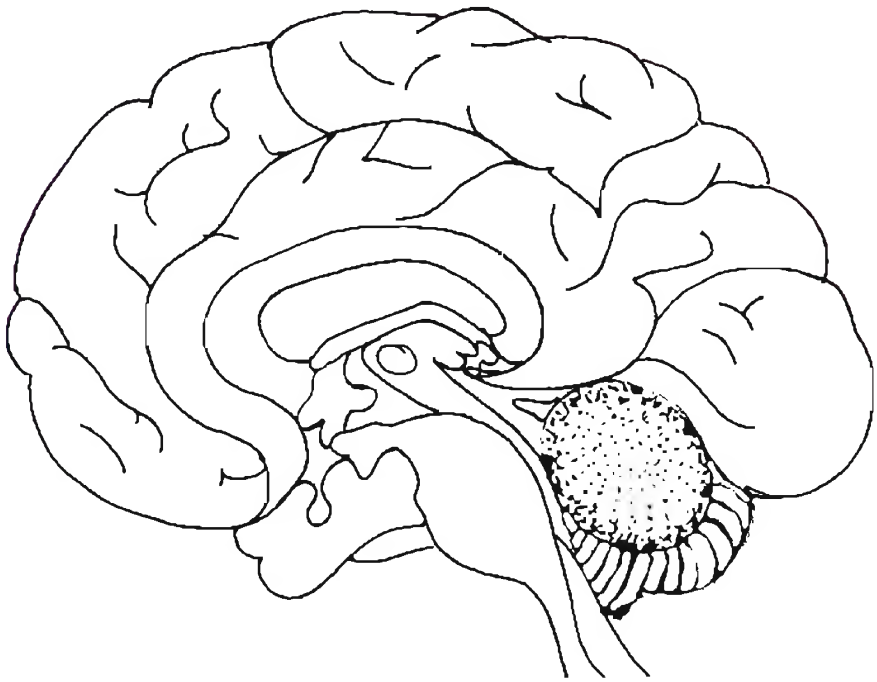
1.	Cerebellum	a)	vital knot
2.	Cerebrum	b)	cranium
3.	Medulla	c)	window to the world
4.	Brain	d)	balance of the body
5.	Sense organs	e)	centre of memory

VI. Answer in one or two sentences :

1. Write any two functions of the brain.
2. What is known as a vital knot? Why?
3. How does a man differ from an animal?
4. Why does a man who has imbibed alcohol lose balance?
5. A passenger who sleeps while travelling in a bus falls back and forth. Give reason.
6. Sense organs serve as windows to the outside world. How?
7. Ragu has to wear spectacles for poor vision. What vegetables would you advise him to eat to improve his vision?
8. Write any two functions of skin.

VII. Answer in detail :

1. State any five functions of the brain.
2. How will you take care of your eyes?
3. Write short notes on
   a) Tongue
   b) The nose.
4. Observe the picture given below and answer the questions



a) Which part of the brain helps in balance? Colour it.

b) The heart beat is controlled by _____. Colour it.

c) Which is the largest part of the brain? Colour it.

9. Hygiene and Prevention of Diseases

The half yearly exams had just got over that day. That night Akalya and her brother Selvin were talking for a long time. They were thrilled because they were to visit their grandmother the next day. At last, they slept. The next day they went with the family to their native place. Akalya and Selvin went around the places of the village and happily played for two days. The third day dawned. Selvin was still sleeping. His mother tried to wake him up. She found his body terribly hot. They got worried and took him to a hospital. The doctor checked him, and gave him some medication. But the fever did not come down for the next two days. The doctor advised a blood test. The test confirmed that Selvin was having **Malaria.**

The lakes and ponds we find in our places are highly useful for domestic use, agriculture,fishing and for creating natural environment. But the same water becomes the breeding places of mosquitoes which spread illnesses like Malaria, Dengue and Chikungunya. When water gets polluted by man, then diseases are on the increase.

Do you welcome mosquitoes?

Warning!

- Mosquitoes spread fever like Malaria, Dengue and Chikungunya.
- Do not allow water to stagnate around the houses.
- Cover the vessels containing water.
- Breed fishes in all water sources.

Mosquitoes that spread diseases

Anopheles

Female Anopheles mosquitoe bite human beings and animals at night. They are the cause of spreading Malarial fever

Culex

Culex is another kind of mosquito that bite, people at night. They spread filarial germs that cause a disease called Filariasis. They also spread brain fever.

Aedis

Aedis bite people during the day. They breed and lay eggs in the stagnating water, in old tyres, coconut shells, etc., These mosquitoes spread Jaundice and Dengue fever.

Diseases spread by mosquitoes:

Name of Disease	Virus	Disease carriers
Malaria	Plasmodium	Anopheles
Filariasis	Wuchereria bancrofti	Culex
Brain fever	Japanese encephalitis	Culex
Dengue fever	Flavi virus	Aedis

Controlling of Disease carriers

Controlling of disease carriers include watching the movements of the carriers, cleaning up their breeding places, controlling them using biological and chemical techniques and creating awareness among the people.

Biological Control

The Gambusia fishes, grown in the water sources, consume the larvae of mosquitoes as their food. Controlling a species by growing another species is known as biological control.

Chemical control

Malathion, DDT and organophosphates can be sprayed on the roof and walls of the house in order to control mosquitoes. This method is known as chemical control.

Swine Flu

Causative Agent

Influenza A, B, C viruses

Symptoms

Fever (above 100 °F), Cough, Headache, muscle pain, tiredness, difficulty in breathing, vomiting etc.

Prevention of disease

Medicines like Tamiflu and Relenza are to be taken within 48 hours after the onset of fever.

Ways to control the spread of swine flu.

- Keep the living place and the surroundings clean.
- Wash your hands frequently using soap and wipe them with a clean towel.
- Cover your mouth with towel while you cough.

Fact

In 1918, the virus H1N1 which spreads swine flu had affected and caused death of nearly 5 crores

Dengue fever

This disease was identified nearly two hundred years ago. Flavivirus causes this fever and Aedis mosquito spreads this fever. These mosquitoes bite people generally during the day.

Symptoms of Dengue

1. High fever
2. Severe head ache
3. Severe joint pain and muscle pain
4. Vomiting

Ways to control Dengue

1. Protect yourself from mosquito bites.
2. Keep the surroundings clean.

Filariasis

Causative Agent

Wuchereria bancrofti

Carriers of Disease

Culex mosquito

Symptoms

Swollen legs.

Prevention of Disease

1. Take care that water does not stagnate around the houses.
2. Keep the surroundings clean.
3. Personal Hygiene.

Filariasis

Chikungunya

Causative Agent

Toga virus

Symptoms

1. Fever (102.2˚F)
2. Head ache
3. Allergic to light
4. Joint pain
5. sleeplessness

Prevention of Disease

So far there is no medicine to cure this disease. There are no injections for the prevention. But, there is a blood test to confirm this disease.

- Keep safe from mosquito bites.
- Take complete rest when ill.

Disease that spread through air

Name of Disease	Carriers	Symptoms	Control and prevention
Common cold	Viruses	Cough, sneezing, head ache, running nose	Complete rest, intake of warm liquids. The duration of cold can be reduced by taking foods rich in vitamin C.

Disease that spread through water

Name of Disease	Carriers	Symptoms	Control and prevention
Cholera	Vibrio cholerae (Bacteria)	• Continuous Diarrhoea • Vomiting. • Rapid dehydration. • Reduced urine output.	Take hygienic food. Take preventive injection. Consume plenty of liquid.

How to prevent diseases from spreading?

- Don't spit in common places.
- Drink only boiled and filtered water.
- Cover your mouth and nose while coughing and sneezing.
- Strictly avoid using public place as toilet.

There are so many diseases that are spreading through air and water. Our government is taking different steps to control diseases. We should also learn to keep away from diseases by keeping our surroundings and ourselves clean. Only then we can prevent diseases from spreading.

Health Care Centres

Now a days, Public Health Care Centres - like primary health centres in villages, Government Hospitals in towns and District Government Hospitals at every District Headquarters - are functioning effectively. These centres not only provide free medical care to the economically backward classes, but also conduct Health Awareness Programmes and Preventive Measures to control diseases.

EVALUATION

I. Choose the right answer :

1. Which mosquito bites people during the day?
   a) Culex b) Aedis
   c) Male Anopheles d) Female Anopheles
2. Kind of fishes that are bred in water resources
   a) Mullet b) Marine Cat Fish
   c) Gambusia d) Tilapia
3. Mosquito that spreads Malaria
   a) Culex b) Aedis
   c) Male Anopheles d) Female Anopheles
4. Brain Fever affects people
   a) who are below age 10 b) above age 10
   c) above age 15 d) people of all ages.
5. Tamiflu is used as medicine for which disease
   a) Dengue b) Malaria c) Chikungunya d) Swine flu

II. Match the following :

1. Malaria	a) Japanese encephalitis
2. Filariasis	b) Plasmodium
3. Dengue	c) Influenza
4. Brain fever	d) Wuchereria bancrofti
5. Swine flu	e) flavivirus

III. Answer in one or two sentences :

1. What is biological control?
2. Differentiate Culex and Aedis mosquitoes.
3. What are the ways of preventing the spreading of swine flu?
4. What are the symptoms of chikungunya?
5. Write a note on prevention of diseases.

6. Mention the name of any two disease carrying insects.
7. Mention the chemicals used to control Mosquitoes.
8. Write a note on Filariasis.

IV. Answer in detail :

1. Explain any one disease that spreads through air.
2. Explain any one disease that spreads through water.
3. Describe Swine flu.
4. What do you know about Chikungunya?
5. List any five diseases that are spread through carriers and write causative agents.

V. Project :

Collect information from your nearby Health Centre about contagious diseases

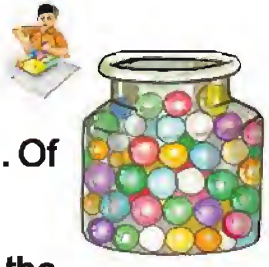
10. Materials and different types of Houses

That was a Sunday morning. Elango and his friends sat under a tree after a hard game of foot ball. But soon, they all sprang up shaking their legs. They found a multitude of ants. They were struck with wonder at the sight of rows and rows of ants carrying particles to build their house. The following Sunday, Elango and his friends, to their surprise, found a huge anthill under the same tree. What a wonder! Particles by which the whole universe is built is called in general as matter.

Matter is of three kinds. They are

1. Solid
2. Liquid
3. Gas

Properties of matter



Do and see

Take a glass jar. Fill it carefully with marbles. Of what shapes are the Marbles?

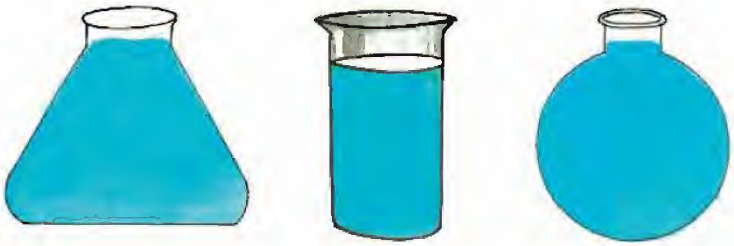
How much space do the marbles occupy in the jar?

Matters that occupy specific space and have specific shapes are called solid.

Do and see

Who does give the shape to the water?

Take a conical flask, beaker and round bottom flask. Fill them with water. observe the shape of water.



Water has no specific shape or size. It takes the shape of the container that holds the water.

Can you mention how much space water occupies in the above shown glass container?

Matter which has no specific shape but occupies a specific space is called liquid matter.

Do and see

What is the shape of air?

Take five balloons. Blow them up with air to different sizes. Can you now mention the shape of air?

Gaseous matter has no shape. They take the shapes of the things that contain them.

Can you mention correctly how much place air occupies in each balloon?

Matters which do not occupy specific space and have no specific shapes are called gaseous matter.

Anything that occupies space and has a specific mass is called matter.
Examples: stone, water, air.

Do and see

1. Keep a stone on the floor. Does it move by itself?
2. Pour a bucket of water on the same floor. Does water splash fast and flow in one direction?
3. Take a balloon filled with air. Prick it with a needle. Does air rush out?

Solid matter does not flow by itself. Liquid matter flows by itself. Gaseous matter flows by itself in all direction.

Do and see

1. Take a stone, press it. What happens?

2. Fill an open vessel with water. Press the surface of the water with your hands. What changes do you see?

3. Press a balloon filled with air. What changes do you see?

Solid matters and liquid matters do not undergo any changes due to pressure. But the space occupied by gaseous matter gets reduced due to pressure.

House

A house is the dwelling place for human beings. Ancient men lived in caves. The caves protected them from wild animals, air, rain and cold weather. Is there anyone who still lives in caves? In modern days, houses are built according to the environment and weather.

Kinds of houses

1. Snow Houses

These types of houses are found in Arctic parts. Since the temperature remains below -46°c throughout the year, these houses do not get melted. Eskimos live here.

These houses look like the shell of a tortoise. The snow houses are called as igloos.

2. Bamboo houses

We find this type of housing especially in earthquake prone places.

Mostly, these are found in Andaman, Indonesia and Japan. Even if the housing gets affected during earthquake and volcanoes people are not injured due to the light weight of these houses.

3. Apartment type of houses

Concrete houses built in many layers are called apartment type of houses. The foundation for this building should be very strong. Pillars are raised from the foundation and each floor is connected with strong bond. Many families can reside in this type of houses. These types of houses are found in cities like Chennai and Mumbai.

4. Tents

They are temporary housings. They are built using cloth, ropes, nylon, polythene and wire. The soldiers, N.S.S and NCC students make these type of houses for their stay during camps. They are also called mobile houses.

5. House built on a tree

They are called safe houses or upper houses. These houses are built by the people in jungles and mountains to protect themselves from wild animals. They are built on trees.

A platform is first constructed on the tree at the required height. The trunk of the tree itself becomes the pillar for the platform. The light wood used for building the rest of the house. A ladder is used to enter the house. During the night, the ladder is removed to protect the inhabitants from animals. Such houses are also found in coastal islands.

6. Sky scrapers

These type of buildings are found in large cities. They look as if they are touching the sky. These type of buildings are built on account of the space crunch in large cities. These houses have got many floors. There is lift facility to go to each floor.

Facts

The tallest building in the world is in Dubai and it is known as Burj khalifa. The height of this building is 828 meters. It has got 160 floors.

Characteristics of a good house

- A house should be built in such a way that it has enough ventilation for air and light. The flooring of the house must be level.
- The doors and windows of the house should be large enough and it should ensure the safety of the house.
- Rain water harvesting must be installed.
- It should have drinking water facilities.
- It must have good toilet facilities.

Maintenance of a house

- Sweep and clean the house daily.
- Wash the bathrooms and toilets every day.
- A good drainage system should be planned so that there water does not stagnate around the house.
- The cleanliness of the surroundings will help for the healthy atmosphere of the house.
- Painting the walls, windows and doors will give a neat look to the house.

EVALUATION

I. Choose the right answer :

1. The type of housing found in the Arctic region
   a) Igloo b) Bamboo houses
   c) Apartment type houses d) Tiled houses
2. The houses built to protect one from animals
   a) Bamboo houses b) House built on trees
   c) Apartment type houses d) Huts
3. Housing found in earthquake prone areas
   a) Apartments b) Igloo
   c) Huts d) Bamboo houses
4. Thing that does not flow
   a) Oil b) Brick c) Water d) Air
5. Solid matter
   a) hard b) has no shape
   c) flows d) soft

II. Fill in the blanks :

1. _____material do not undergo any change due to pressure.
2. _____has no specific shape.
3. The house found in Japan is made of _____
4. Snow house is also called _____
5. In cities the houses found are mostly _____

III. Match the following :

1. Bamboo houses	a) Moving houses
2. Snow houses	b) Indonesia
3. Houses on the trees	c) Eskimos
4. Tents	d) Dubai
5. Tall buildings	e) Safe houses

IV. Answer in one or two sentences :

1. Touch and press with your finger an iron ball and a glass of water separately one by one. What do you feel? Why?
2. Explain why liquid has no specific shape.
3. Gaseous matter has flowing nature. Explain it with an example.
4. Write a short note on tree houses.
5. What do you know about skyscrapers?

V. Answer in detail :

1. Differentiate solid, liquid and gaseous matters.
2. Explain with experiment any two characteristics of solid, liquid and gaseous matters.
3. Describe the different kinds of houses.
4. What are the characteristics of a good house?

VI. Project

1. List the types of housing you find on the way from your home to the school.

1._____ 2._____

3._____ 4._____

2. Shall we design the rooms in our home!

Kitchen

Guest Room

Bath Room

Study Room

3. Make use of the waste materials you find in your home and design a house and decorate it.

11. Save Energy

Keerthana returned home very tired from school. She kept her school bag, she went straight away to bed. Her mother was washing clothes. She called Keerthana to help her. "Mom I cannot help you, I played for a long time in the playground. I am feeling very giddy and hungry" said Keerthana. At once, her mother fed her with her favourite rice with greens. The food was very tasty and she ate everything. Now, she felt energetic. She ran to her mother and helped her.

We need energy to walk, run and to do work. We get energy from the food we eat.

From where do the plants get energy to prepare food?

Plants prepare food by taking energy from the sun during photosysnthesis.

Man gets energy from food. The following get the energy from...

Electrical Energy

Electricity is generated through Hydro electric power stations, Atomic power stations, Thermal power stations, and wind mills.

Fact

Electricity is generated from sunlight and from waste products.

Hydro electric power station

Atomic power station

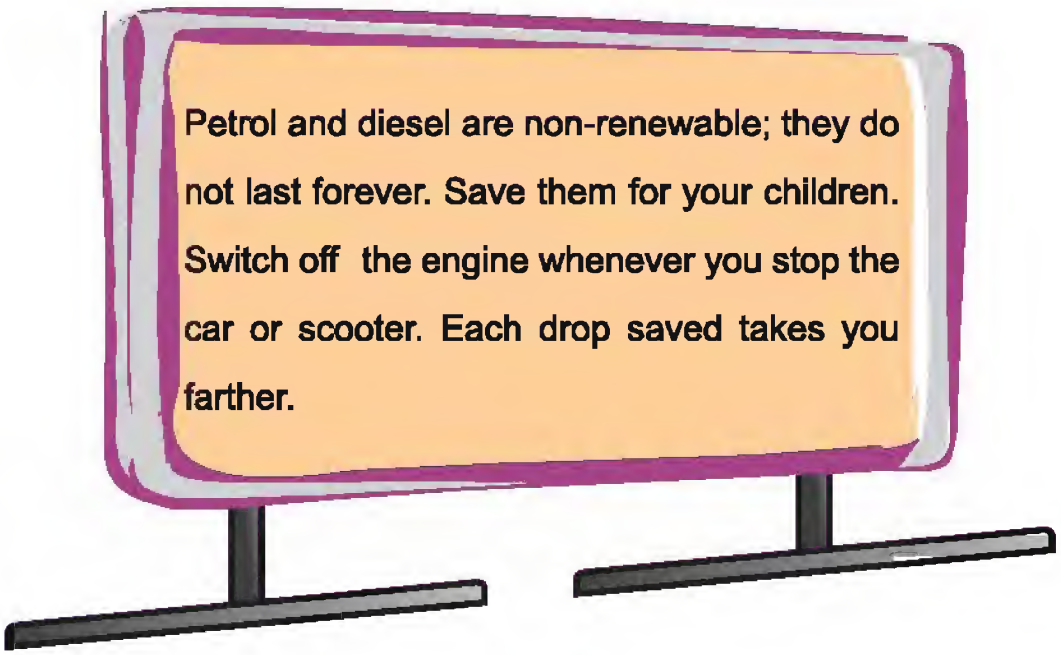
Thermal power station

Facts

100 units of electrical energy is to be generated to provide 20 units of energy to our house. 80 units of energy is wasted when they flow through the transmission wires.

Energy Resources

Keerthana went to the shop with her father by scooter. While returning home, her father stopped at a petrol bunk to fill petrol in his scooter. There Keerthana read the advertisement written on a board and was surprised.



Save Energy

She showed the board to her father and asked why petrol and diesel would not last long. Her father answered that they were available only in a few places deep under the earth and exhausted shortly. We should use our vehicles only when absolutely necessary.

Non-Renewable Energy Sources

The animals and plants were buried under the earth millions of years ago. Due to high pressure and temperature, they decomposed to become coal and petroleum

.

Petrol, diesel, bio-gas and coal are available only in limited amounts. We consume them continually in large amounts, they are fast depleting. They could be formed again only after another million of years. They are called **non-renewable resources.**

Renewable resources:

The sources that can be produced naturally and not be exhausted are called **renewable resources.**

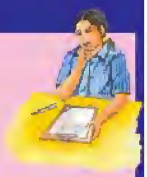
We get energy from many sources.
Sun is the ultimate source of all kinds of energy in earth.

Renewable resources

1. Sun
2. Air
3. Water
4. Cow dung(Organic matter)

Fact

The hawkers at the sea shore of Chennai use solar lamps at night



Uses of Solar energy

- Solar cells produce electricity during the day and store it to illuminate the lights of streets and houses at night.
- Villages at the hill stations use solar cells.
- Solar cookers help us to cook without the use of fuels.

Other equipments that use solar energy

Solar watche

Solar cooker

Solar calculator

Save Energy

Do and See

Take some fresh cow dung, mix it in water and pour the mixture into a bottle. Close the bottle tightly for three days. If you open the bottle now, a kind of gas comes out. It is inflammable. This is gobar gas, when it is produced in large quantity it is used as a fuel.

Making Cow-dung Cakes

Gobar Gas

Facts

India stands first in annual solar power generation. Second in bio-gas, third in hydro-electric power generation and fourth in wind power generation at the world level. Tamilnadu stands first in wind power production.

Keerthana's project:

Keerthana's teacher said,"If we save one unit of electrical energy at home, we save the production of 5 units at the power station. So, we should save at least 4 units of electrical energy weekly by using the electrical appliances carefully".

With the help of her father Keerthana noted the meter reading at her house on Sunday morning of that week. She monitored the use of all the electrical appliances in her house carefully for a week.

- She unplugged the television every day at night before she went to bed.
- She switched off the fans and lights whenever they were not necessary.
- She switched off the charger as soon as her father's cell phone was completely charged.
- She opened all the doors and asked her mother to avoid the use of fans and lights during day time.
- She reduced the use of the television.

She followed these methods for a month. She was glad when her father said that they had reduced the consumption of electricity by 20 units during that month.

Ah! Keerthana saved the production of 100 units of electrical energy!

Why don't you try these methods and save electrical energy consumption of your house?

Facts

- Using CFL lamps(Compact Flourescent Lamps) in the place of tungsten lamps would save electrical energy.
- The National Energy Conservation Day is December 14.

Saving energy comprises of judicial use of the energy resources.

Save Energy

EVALUATION

I. Choose the right answer :

1. The source of all kinds of energy on the earth is _____
   a) water b) wind c) sun d) fire

2. The non-renewable energy source is _____
   a) coal b) water c) cow dung d) sun

3. For which energy production does India stand first at the world level?
   a) wind power b) hydro electric power
   c) bio gas d) solar power

4. Which is the energy produced by wind mills?
   a) light energy b) electrical energy
   c) heat energy d) sound energy

II. Fill in the blanks :

1. A non renewable source of energy is _____.
2. The national Energy Conservation Day is _____.
3. Plants use _____ energy for the production of food.
4. _____ produces electrical energy using solar energy.
5. It takes _____ years for the formation of petroleum.

III. Answer in one or two sentences :

1. What is the energy resource used by buses and two wheelers?
2. Which is the source that gives energy to human beings?
3. From which do the thermal power stations receive energy?
4. What kind of energy is solar energy?

IV. Which one will you select to save energy in the following situations.

1. To go to a near by shop (Two wheeler / bicycle)
2. To heat the water for bathing (Gas stove / Solar stove)
3. To illuminate an open-yard (CFL lamps / Tungsten lamps)
4. To make the study room bright at day (Open windows / electric lamps)
5. List the renewable and non-renewable energy resources in the following :

   Kerosene, Coal, Sun, Sea waves, Petrol, Gobar gas, Wind, Wood, Water

V. Answer in detail :

1. What are non-renewable resources of energy?
2. What are renewable power resources?
3. How is coal formed?
4. Why are coal and petroleum non renewable resources?

VI. Project :

List the different ways of saving energy.

12. Scientists

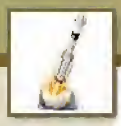
Vikram . A. Sarabhai

Today we can sit in the comfort of our home and watch the world news, cultural programmes, recreational programmes, sports, and the climatic conditions through television, can't we?

Likewise, the nation's water, land, mineral and ocean resources, defence, military intelligence and communication are well developed because of artificial satellites. Shall we learn about Vikram . A. Sarabhai who sent satellites to space to create a new era of research in Astrophysics in India.

He was born on 1919 in Gujarat. From his school days he showed much aptitude towards science and mathematics. Later he went into space research. He installed the Thumba Rocket Launching Station near Thiruvananthapuram.

Name	:	Vikram. A. Sarabhai
Birth	:	12th August 1919
Place of birth	:	Ahmedabad, India
Death	:	30th December, 1971 at Kerala,India
Work station	:	Indian Space Research Centre
Guide	:	Sir. C.V. Raman
Awards	:	Padmabooshan and Padmavibooshan



Achievements:

He designed the Aryabhatta satellite and sent it to space. This genius who got name and fame for our country on par with the developed nations of the world is none other than Vikram.A.Sarabhai.

It was he founded Sarabhai Physics Research Station and Indian Space Research Institute. He was also responsible for making our country excel in space research.

He also did research in cosmic rays. He had discovered that cosmic rays rise from space and reach the earth. He explained that the changes which happen between the planets are reflected by the cosmic rays. He made this fact known to the world. His aim was to make everyone understand science easily.

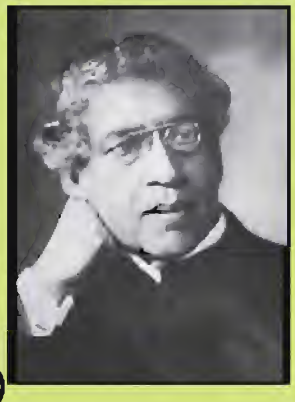
His experiment on "the satellite industrial television" was successful. Because of his discovery about 5 million people in 2400 villages in India were able to enjoy a variety of television channels. He died at the age of 52.

Sir. Jagadish Chandra Bose

Do you think only you have life? feelings? Can only you hear and enjoy music, feel heat, cold and hear sound? "Like you, we also have all sensations" says the plant community. Shall we learn about Sir. Jagadish Chandra Bose who discovered this fact and made it known to the whole world?"

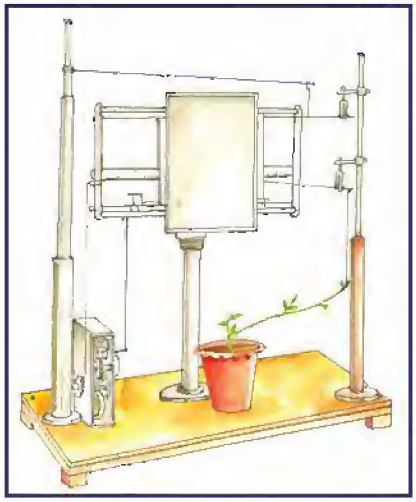
He was born on 30th November 1858 at Mymensingh in Dhaka.

Name	:	Jagadish Chandra Bose
Birth	:	November 30th,1858
Place of birth	:	Mymensingh, Bengal
Death	:	November 23rd,1937 Bengal, India.
Work station	:	Presidency College, Kolkatta (Physics professor)



Achievements

- He was involved in the Radio waves research. He discovered and proved that electricity can be sent to space as electrowaves without wire.
- Marconi invented the Radio with the guidance of the electro magnetic waves invented by J.C.Bose.
- He invented KOHAR, an instrument to detect radio waves. He invented a wonderful instrument named Crescograph which can trace the micro-sensations of plants.



Crescograph

For his achievements, the British government knighted him in 1917 and this earned him the title of 'Sir'. He died on November 23, 1937.

The Bose Institute at Kolkatta still continues his work on plant research.

Louis Pasteur

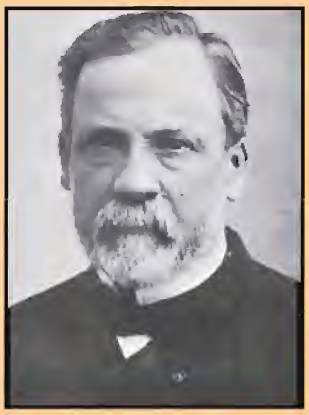
He is an important scientist of chemistry and microbiology. He discovered the anti-rabies vaccine and played a vital role in the field of medicine. Shall we learn more about this great person?

Achievements

- He discovered the Anti-Rabies Vaccine
- He discovered the Pasteurization method of preserving milk.
- He established the fact that the curdling of milk and fermentation are caused by micro-organisms
- He discovered different methods of food preservation.
- He made known the fact that some micro-organisms can live without oxygen (anaerobes).
- He discovered various techniques for prevention of diseases. So he is known as the "Father of Microbiology"

Scientists

Name	:	Louis Pasteur
Birth	:	27th December 1822
Place of birth	:	Francistole, France
Death	:	28th Sept 1895 in France
Work station	:	University of Strasburg France.



EVALUATION

I Choose the right answer :

1. In which state is the Thumba Rocket launching station located?
   a) Andhra b) Kerala c) Tamilnadu d) Karnataka
2. Name the satellite which was designed by Vikram . A. Sarabhai
   a) Apple b) Rohini c) Aryabhatta d) Insat
3. An instrument, used to bring out the feelings or sensations of plants is _____
   a) Altimeter b) Crescograph
   c) Telescope d) Microscope
4. Father of microbiology is _____
   a) Jagadish Chandra Bose b) Sir. C. V. Raman
   c) Louis Pasteur d) Vikram . A. Sarabhai

II. Fill in the blanks :

1. The research guide of Vikram Sarabhai was _____.
2. In 1996, Vikram Sarabhai was awarded _____a high award of the Indian government.
3. British government honoured Jagadish Chandra Bose in the year 1917 with the title of_____
4. The Bose institute is in _____
5. The vaccine for Rabies was discovered by_____

III. Match the following :

1.	Vikram Sarabhai	a)	microbial research
2.	Louis Pasteur	b)	wireless electricity
3.	Jagadish Chandra Bose	c)	space research
4.	Marconi	d)	satellite
5.	Aryabhatta	e)	radio

IV. Answer in one or two sentences detail :

1. Write a short note on Jagadish Chandra Bose.
2. Write about the life and contributions of Louis Pasteur.

V. Answer in detail :

1. What do you know about the life history of Vikram Sarabhai?
2. Enlist the scientific achievements of Vikram Sarabhai

VI. Project :

1. Collect information about any two Scientists – their life history and contributions to the field of science.

13. Botanical Garden

Mettupalayam

15.05.2011

Dear friend Sundar,

This is Tamilarasan writing to you. I am fine here.

I visited a Botanical garden at Ooty last week as part of an educational tour. I would like to share with you my joyful experiences in this letter.

We were eagerly waiting for the bus in our school campus. Once the bus came, we entered the bus one after the other and sat down. The bus took off from Mettupalayam for Ooty.

After traveling for some time, we were much enthralled by the scenery

The mountain road had lot of hair-pin bends. Cold air blew in through the windows. The trees were so tall that they seemed to touch the sky .Gentle streams flowed down the mountain. The pleasant green meadows, the water drops on the grass all made my journey pleasant. We were able to see tea plantations and aricanut trees.

Tea plantation

Aricanut trees

We also enjoyed the sight of medicinal trees like Eucalyptus and Cinchona.

The teacher who accompanied us pointed out the names of the trees. We saw trees like Teak, Ebony, Red- wood, Karungali. The teacher also explained the uses of those trees. The driver stopped the bus as he saw a tree fallen across the road. The road workers removed the tree by cutting it into small pieces. The teacher explained that the central black portion of the tree is hard wood and the outer is softwood. The parts of trees which are used for construction purposes are called wood.

The wood of trees is used for making articles from small match sticks to constructing huge ships.

Pine trees are used to make matchsticks.

To build houses

- Teak
- Poovarasu
- Bamboo

To make furniture

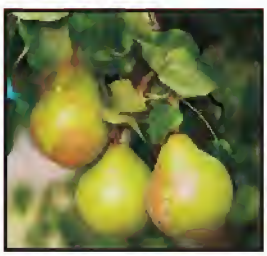
- Mango
- Manjanathi
- Padak

For artistic work

- Teak
- Bamboo
- Rose wood

We saw monkeys jumping from tree to tree with pear fruits in their hands. Our teacher explained the cultivation process of Pear, Orange, Plums, Potato, Radish, Carrot, Cabbage, which we consume as food.

Plants used as food

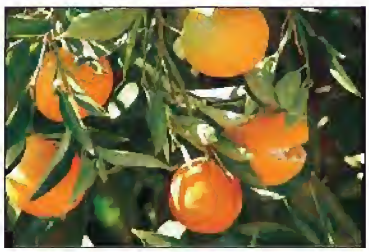


Pear

Carrot

Plums

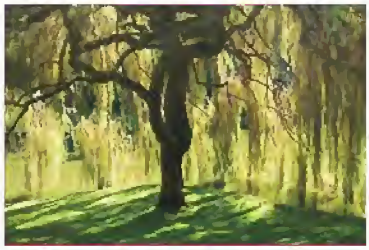
Potato



Orange

Cabbage

Our teacher showed us a tree and said that it was a willow tree. He also added that cricket bats are made from willow trees. We were surprised and took a group- photo under this willow tree.



Willow tree.

After the tree was removed from the road, the bus continued on its journey. As we went higher up the mountain road, we felt the increase of cold. We were grateful to our teacher who had instructed us to bring woollen clothes.

After sometime, the bus stopped near a tea stall which was adjacent to the road. There we drank tea of different flavours. We got a pleasant smell from the next shop. With the permission of our teacher

we went inside the shop. We found lot of perfumes for sale. These were made from Javadu, Cloves, Sandal, Cinnamon and fragrant flowers. The shopkeeper understood our curiosity and started explaining about the perfumes. The perfumes made from flowers have strong scent and

also have medicinal properties . They refresh both the mind and body. Pepper, Cinnamon, Cardamom, Turmeric improve the aroma and the taste of food. We thanked the shopkeeper, bought some perfumes and left from there.

After travelling for sometime we saw a notice board which stated "OOTY WELCOMES YOU". We all felt very happy. The bus came to a halt and we all got down one after the other. We saw greenery everywhere. After finishing our lunch we were ready to leave for the Botanical Garden.

A Guide from the Horticulture Department led us into the garden. We lost ourselves in the beautiful scenery. We saw plants, creepers and trees on the way. He first took us to the herbal farm. He pointed out the medicinal plants to us and also explained their uses. He said plants with medicinal properties are called Herbs.

Plants used as medicines

Ginger
for bile

Mint
for digestion

Eucalyptus
for headache

Manathakkali
for mouth ulcer.

Vallarai
to increase the
memory power.

Tulsi
for cold
and cough.

AloeVera
for skin disease

Acalypa indica
(Kuppaimeni)
for skin disease.

Keezhanelli
for
Jaundice

Indian Sarsaparilla for cooling the body system.

Dhoodhuvalai for chest cold.

Jatropha for constipation.

Then we went to a flower show. The guide from the Horticulture Department showed us beautiful flowers, told us their names and explained their different uses.

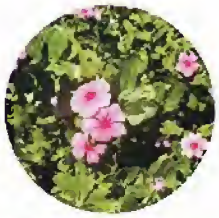
All the flowers were beautiful. Some flowers were white in colour, most of them were multi-coloured. Some flowers had a pleasant smell and some did not have any smell.

The different varieties of roses were pleasing to our eyes. We felt very happy seeing the bouquets made of Rose, Marigold and Orchid.

The guide explained about the flowers used as medicines, food and as perfumes. He also said that blue and yellow dyes were made from the flowers Clitoria and Morinda respectively. These dyes are used to colour clothes, to manufacture inks, paints and varnish.

Drumstick flower

Thumbai



Nithya kalyani

Flowers used for medicinal purposes

Hibiscus

Rose

Neem flower

Datura flower

Herbal flowers	Ailment
Nithya kalyani	- for blood cancer
Hibiscus	- for heart problem and blood purification
Neem flower	- to worms infestation of the Intestine
Datura flower	- to cure wheezing
Clove flower	- to cure tooth ache
Rose	- for cool down the body system
Thumbai	- to cure cold and cough
Drumstick flower	- rich source of iron and to increase the blood count

Lotus

Dhalia

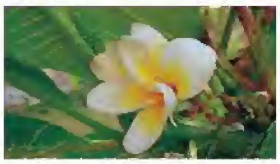
Jasmine

Parijatham

Flowers Used to Make Perfumes

Mari Gold

Rose



Shenbagam

Chrysanthemum

After taking rest for a while in the garden, we returned to the town happily. This educational tour made me happy. Won't you write to me about your tour experience?

I am expecting your letter soon.

With love,

Tamilarasan

R. Sundar,
25, Pothigai Street,
Adambakkam,
Chennai - 600 016.

Botanical Garden

EVALUATION

I. Choose the right answer:

1. An edible cereal is

   a) Motchai b) Paddy c) Broad beans d) Field beans

2. An edible pulse is

   a) Blackgram b) Paddy c) Wheat d) Millet

3. An edible flower is

   a) Jasmine b) Crossandra c) Cauliflower d) Tube rose

4. A medicinal plant

a) Lady's Finger b) Beans

c) Sugarcane d) Keezhanelli

5. Good quality trees used for building houses

a) Neem b) Teak c) Vagai d) Poovarasu

II. Fill in the blanks :

1. _____ is a vegetable which can be eaten raw.
2. To make wooden articles the _____ part of the tree is used.
3. _____ is used to cure jaundice.
4. _____ is a good medicine for toothache.

III. Match the following :

1.	Edible flower	a)	Manathakali
2.	Cereal	b)	Teak
3.	Best tree	c)	Plantain flower
4.	Medicinal plants	d)	Marigold
5.	Perfume	e)	Ragi

IV. Answer in one or two sentences :

1. What are herbs?
2. Mention some green leafy vegetables.
3. Write the names of vegetables and roots which can be eaten raw.
4. What are the uses of flower?
5. Write some of the trees which are used to build houses.

V. Fill in the tabular column :

Mango, Sugarcane, Rose, Paddy, Teak, Hybiscus, Ragi, Tube rose, Guava, Brinjal, Tomato, Poovarasu, Tulsi, Jack fruit, Nandia vattai, Karugali, Bamboo

As medicine	As food	As perfume	To make furniture

VI. Project :

- Collect pictures of flowers and prepare an album.
- Collect available flowers, press and dry them, paste them, write their names and prepare an album of dry flowers.
- Collect information about the medicinal plants, their parts, and their nature of healing.